

AMERICAN VETERINARY REVIEW.

MAY, 1911.

EDITORIAL.

EUROPEAN CHRONICLES.

PARIS, March 15, 1911.

PROLAPSUS RECTI IN PREGNANT MARES.—In his excellent work on obstetrics, Prof. Williams of Cornell University states (page 855) that "the prognosis of prolapse of the rectum in the mare during parturition is highly unfavorable." Why?

In the *Annales de Bruxelles*, Mr. Jos. Hamoir, veterinary practitioner, gave an explanation of this complication in mares, and takes advantage of it to insist on the proper treatment which it demands. Not to relieve the prolapse only, as this is generally easy to obtain, but to remove also the severe prognosis.

First, what is the cause of the prolapse and what alterations take place in the pelvic cavity when it occurs?

Without considering the various conditions of prolapse, Hamoir only has in view that which takes place in mares at the time of parturition, or delivery. Of course, because of the violent expulsive efforts that all mares make during the labor of the foetal expulsion, the rectum always prolapses. Even without the presence of distokial condition, with an accouchement, normal or nearly so, a prolapse may be observed. But in many of these cases, as soon as the efforts cease, the prolapse returns to its place, although in some instances it does not and the intes-

tines may be projecting as far down as the hocks of the animal and then the interference of the surgeon as well as that of the obstetrician is in demand.

In these last cases, is there not any other cause besides the efforts of expulsion made by the mare. For Hamoir, these do not act alone, and the state of repletion, of fullness of the rectal cavity is a condition *sine qua non*, or at least very favorable to the formation of a prolapsus. The abdominal and the uterine pressures, acting simultaneously, upon such easily displaced organs, must have for results its expulsion by the anus. But with these pressures and as a consequence of the displacement of the intestine backwards and outwards, varying from 30 centimeters to one and half meters, the double of the length of the rectal bag, there must have been a laceration of the peritoneal support of the intestine, viz.: the peri-rectal peritoneum, the mesorectum and even that of the floating colon, which may have given away in a more or less considerable length and hence a necessary and fatal complication.

The physiological sequelæ of such lesions are readily understood. The intestine is deprived of the blood vessels and nerves which reach its small curvature between the two folds of the peritoneum which support it. Its muscular coats become paralyzed, anæmia of its structure is manifested by the gangrenous aspect of the organ, coprostasis and peritonitis will in short time finish their work by the death of the animal.

The diagnosis of these secondary lesions is not difficult for the practitioner, who carries them in his mind. The extent of the prolapse is to be taken in consideration, first of all, and when the portion of the intestines projecting is about 30 centimeters in length, the probabilities of the lesions must always be suspected. The reduction may be made very quick and without difficulty, but if coprostatis is manifested soon after, if rectal examination reveals a condition of the rectum being flappy and empty, with a mucous membrane dry and without mucous lubricating it, there can be no more doubt, the case is complicated with rupture proportional to the extent of the prolapsus. The

passage of gases and the immediate return of enemas which may be observed, are due to abdominal pressure and not to the contractions of the intestine. As a consequence of this condition the general health of the animal is rapidly modified, fever takes place, there is loss of appetite, constipation, colics, violent expulsive efforts, septicemia peritonitis and finally death in four or five days.

With these conditions, of course, Prof. Williams was right, "the prognosis is always serious." Out of 15 cases, statistics record one recovery only, or a mortality of 92%.

Is there a treatment? Hamoir resumes it as follows: With manual evacuations of the rectum, soothing enemas, or laxative injections, and the life of the animal may be saved for a few days, but notwithstanding these, death will finally occur.

The only rational therapeuty consists in the resection of the intestine, deprived of its vascular and nervous support and which is paralyzed and anemic. Reproduce the prolapsus, which is not always easy to do, resect all the prolapsed portion a few centimeters from the anus, suture the two concentric extremities of the rectum and complete the operation according to the general *modus operandi*. *When the Prolapsus is Extensive*, do not be tempted to be satisfied with the deceiving success of a reduction which is generally easy, *but do operate immediately*.

As prophylactic measures, Hamoir recommends that *one or several evacuating enemas be given to pregnant mares as soon as the work of delivery sets in*.

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ANTIPHYMATOL AGAINST BOVINE TUBERCULOSIS.—In the last October issue of the *Zydsch ft voor Vecartsenijhunde*, there is an article on this subject by Prof. Klimmer relating to his method of vaccination by the use of antiphymatol, which is resumed as follows:

The experience of the last ten years has demonstrated that tuberculosis cannot be controlled in an efficacious manner by hygienic measures only or by the preventive inoculation accord-

ing to the methods of von Behring or that of Koch-Schutz. The acquired immunity granted by this inoculation does not last much more than a year and cannot be made longer, as animals of a certain age stand inoculations badly and besides there is danger of human virulent bacilli passing into the milk. And again, intra-venous inoculation gives about 7.5% of loss, and is not without danger for man either, at the time of the operation, or by the use of the milk or of the meat of animals recently immunized. On those accounts this method is left aside in Germany.

Since five years, the professor has, with a number of his colleagues, used a new method consisting in the union of a preventive and curative inoculation with the easy application of hygienic measures. He uses a vaccinating substance, *antiphymatol*, entirely harmless for men or bovines, and whose vaccination can be renewed each year so as to give a lasting immunity. The innocuity of antiphymatol for bovines is proved by fifty thousand inoculations. Calves of from one to two days old, or aged and also pregnant cows, as well as bovines already tuberculous, have stood the inoculations well. No observations of latent diseases made more serious have been seen and a favorable effect on the tuberculous process has been observed.

The inoculations are made under the skin, they do not give rise to pulmonary inflammation, oedema or abscesses, as they are noticed so often after the injection of virulent bacilli.

Antiphymatol is absolutely harmless for the man who makes the inoculation or for the one who drinks the milk or eats the meat of the vaccinated animal.

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Klimmer has controlled the preventive action of antiphymatol compared with the preventive action obtained by the inoculation of human or bovine bacilli, attenuated by heat; taking for this nine cattle, infected experimentally. The infection was made by the intravenous injection of 1-2 milligramms of bovine bacilli,

three months after the subcutaneous or the intragenous preventive inoculation. This infection gave amongst the control cattle an acute attack of tuberculosis after 4 to 6 weeks, while the animals vaccinated two to four times with antiphymatol stood it very well. These cattle, in good condition, were killed from 3 to 5 months after having been infected and at the post mortem in two of them there were found lesions. One had two and the other seven small tuberculous calcareous deposits as big as the head of a pin in the mediastinum and lymphatic glands. The other animals which had been vaccinated with antiphymatol two or four times showed no tuberculous lesions whatever. Prof. Schurer of Vienna has extensively experimented with Klimmer's method and says: "The method is harmless for the subjects to vaccinate and for the one who does it." The meat is not dangerous to consume even when the animal has been killed a short time after the vaccination. This inoculation gives for a certain length of time a great resisting power against the disease, but the duration of this immunity remains yet to be determined."

Antiphymatol has also been experimented with to the point of view of its curative properties. In this the results were very satisfactory. The application of the method can be resumed as follows: The animals are first submitted to the ocular test with phymatine, to separate the healthy ones and get an idea of the extent of the disease in the herd. The subjects affected with advanced tuberculosis and specially those that have lesions of the udder are killed as soon as possible. The vaccination is made with 5 c.c. of the product (sold by Humann and Teissler of Dohna, Saxony). The injection is made on the left side of the neck. It must be done the first year once, with non-tuberculous stock and with those that are affected three times at three months apart. The following years it is made only once. Calves are vaccinated when three months old. So as to avoid an infection of the calves before the vaccination, they must be fed only with milk coming from healthy cows or with pasteurized milk.

EXSUFFLATION IN PLEURITIC EXUDATIONS.—It is yet but a short time when all the treatise of medicine and therapeutics, at the chapter of Thoracentesis, recommended great care to avoid the introduction of air in the pleura. To-day, not only the introduction inspired is feared no longer, but even is it considered as a therapeutic application and is resorted to quite freely. The indications are daily increasing and the days are not far when it will be part of the technic of complete Thoracentesis.

Dr. Gouget writes indeed in the *Presse Medicale*: Since Parker, who, according to the *Lancet*, wrote an article headed "Suggestions for the treatment of special cases of Empyema by Thoracentesis and the simultaneous injection of air," and who was the first to inaugurate this treatment in 1882 so as to allow the evacuation of pus in some cases of empyemas with thick rigid walls, the introduction of air in the pleura has been permitted by a certain number of operators in various circumstances and with equally different objects.

Some like Eward, and Benham, Wenckebach, Huss, have applied it for chronic empyema, to facilitate the escape of pus and avoid the retraction of the chest. Others like Potain, have made it a mode of treatment for hydropneumothorax, to prevent the reopening of the pulmonary fistula and a new collection of the exudate. It was with the same object in view that Vaquez and Quiserne, Achard and Grenet employed it for receiving pleurisies. And again others to avoid incidents and accidents (pains, coughs, expectorations) of thoracentesis and allow the complete evacuation of very abundant exudates. Finally, Mosny and Stern have shown that alone, the introduction of air in the pleura, permitted the possibility of the escape of fluid in some cases of "Blocked" pleurisies.

To resume the various indications which seem to be free from discussion, there are:

1. The introduction of air in the pleura is the only means to evacuate some "blocked" effusions, in pleurisies with thick rigid walls;

2. In overcoming the effects of the aspiration or even the simple decompression upon the pulmonary tissue and upon the thoracic wall, it prevents pain, cough, pulmonary edema, re-opening of fistula and retraction of the walls. At the same time it permits the complete evacuation of the largest exudates.

3. It also seems to prevent in a certain measure the return of the fluid.

By opposition to all those advantages, what are the possible objections? With all reserve for the cases where a great quantity of air has been pushed in the pleura with the belief of making aspiration, there has never been any inconvenience mentioned. Not only the careful introduction of air in the pleura is harmless but it is not even necessary to have it filtered. Kawekara and Kawai, Achard and Helmgren have proved it. At any rate, does air infect peritoneum after laparotomy? Infection by atmospheric germs is no longer feared as in days gone by and filtration of the air can go aside with the spray which was used in the first days of antisepsy.

There is then no contra-indications to the introduction of air and its indications are so numerous that they cover almost all the cases, except those of recent and small effusion where even thoracentesis is useless.

Some authors have been brought to consider the introduction of air as the natural complement of all thoracentesis and resort to it systematically.

It is the practice of many, and in a recent article published in Stockholm by Holmgren, he goes even further, as instead of allowing the air to enter by aspiration he replaces it by a process which he calls *exsufflation* which he considers as the method of choice. Theoretically, the complete evacuation of the effusion and the presence of a thin layer of air between the pleura walls can be but advantageous. The first allows the complete unshrinkage of the lungs and it is not the slight elastic compression of the air that could interfere with it. At any rate its presence will prevent the formation of adhesences.

If this method would prove correct, many animals thus treated might be saved. Taking into consideration the serious characters that pleurisy sometimes assumed in horses the treatment with exsufflation might find its indications.

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TRANSLUCID NODULES AND THOSE OF GLANDERS IN SOLIPED LIVERS, DIFFERENTIAL DIAGNOSIS.—The *Revue* of Leclainche reproduces from Dr. Cesari the resume of a series of articles, which were published in the *Clinica Veterinaria* by Dr. Francesco Valero, a while ago.

Frequently there are found in the liver of solipeds and principally of horses, white-yellowish nodules, very often calcified, varying in size from that of a seed of millet to that of a pea, which are disseminated sometimes in great numbers under the capsule of the organ or in the parenchym of the hepatic gland. These lesions are also found, but less frequently, in the lungs and the lymphatic glands.

For some authors, they are of glanderous origin and for others they are parasitic. Their nature has for a long time been the object of great discussions.

Successively, Oreste, Ercolani, Galli-Valerio, von Ratz, Lisi, Malesba, Scacco have shown that these lesions were most often due to eggs of distomas. Mazzanti, with many observations, admits that they may also be produced by embryos of *Strongylus Armatus*. On the contrary, Kittl, Olt, Ostertag, Grips, Schutz, Kunnemann think that in most cases they are lesions due to echinococci or coenurus. And finally, more recently Calnette comes with the examination of about one hundred livers, showing that in some cases these nodules are due to nematodes in some cases, to eggs of distomas in others or in the majority of cases form by *tenia echinococcus*.

However, all the authors agree in recognizing the analogy that, to the macroscopic point of view, exist between these parasitic nodules and those of glanders. Kitt, however, has made

the remark that when the nodules exist only in the liver, they cannot be of the nature of glanders, as this affection of the liver is always of embolic origin and, therefore, connected with the presence of more important glanderous lesions in other organs. But, leaving aside the cases where the nodules are strictly localized in the liver, it remains nevertheless a true fact that the macroscopic aspect is insufficient to decide whether one has before him glanderous or parasitic lesions or embolic infracti, by thrombosis from the abdominal aorta, the portal vein or older embolies from the umbilical artery.

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To this point of view can the presence of general, or perhaps better, of local eosinophily be of any value? Schutz, after calling the attention to the presence of eosinophites in parasitic nodules, has demonstrated the diagnostic importance of this character to distinguish the tubercles of glanders from the parasitics. But it must be acknowledged that if the absence of eosinophily may justify the exclusion of a suspicion of the parasitic nature of the lesions, one cannot conclude to the nature of glanders origin, and in this case it is necessary to resort to other methods of diagnosis.

Fracaro, in his researches, has proposed to find to what extent it was possible to trace the parasites by their remains or by their eggs in the nodules of the liver and also to find out the presence or the absence of local eosinophily and thus find the simplest technic to reach a positive diagnosis.

In none of the numerous lesions that he has examined to this purpose has he succeeded in finding the presence of the parasites, their remains or their eggs. But these negative observations have proved nothing against the theory of the parasitic origin as the calcification of the lesion destroys them very easily. By opposition, histological sections have always shown numerous eosinophilous cells, gathered in the neighborhood of the nodules and of granulations easily discovered. He has succeeded in exhibiting these eosinophilous elements in simple frottis made

from the hepatic tissue surrounding them. He fixed the preparation with alcohol-ether during 15 minutes, colored them 10 minutes with a boiling solution of Giemsa, and then washed them with distilled water.

By this method the differential diagnosis between the parasitic nodules and those of glanders is rapidly made by the discovery of the local eosinophily.

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PNEUMOCOCCIC INFECTION.—How many unknown facts do yet exist in the solution of this important problem. From the *Presse Medicale* I find the following, which I present to our readers as interesting, even if indirectly pertaining to our medicine. In days gone by, cold explained everything in the process of infection in pulmonary diseases. Then came the theory or better, the discovery of the pneumococcus, which seemed to settle the question, notwithstanding the discussion relating to the manner in which the microbes was transmitted. It is now nearly proved that the bronchial and pulmonary mucous membranes, in healthy condition, cannot be penetrated by the pneumococcus. The blood and the lymphatic circulation appear to be more in favor now and pneumonia may be considered as only a secondary localization of the microbe. To invade the organism, the pneumococcus finds its way of entrance most often in the buccopharyngeal tract, sometimes through the skin or the mucous membranes, exceptionally through the intestines.

After these considerations the author that I reproduce enters into the most interesting part of his work, viz.: the contagion of pneumonia, specially by the medium of fleas.

Mice are very susceptible to pneumococcus and experience has proved that fleas play a very important part in the pneumococcic contagion from mouse to mouse. Every flea, having bitten a pneumococcic animal, carries into its organism quite a number of pneumococci, which are detected in the excreta of the fleas. Besides this, the bite of a flea on the skin becomes a sufficient door of entrance for the microbe to pass.

Can the pneumonia of mice be transmitted to man? There are facts which seem to prove it. The fleas of rats and of mice are fond of human blood and they bite men. Living on a pneumococcic animal, the fleas carry with them numerous pneumococci that they have picked up on the bed of sick people or sucked from their blood. And again, clinical facts have a tendency to plead in favor of this possible transmission of pneumonia by fleas. Some true epidemics have been observed. The pneumonias are more frequent in months where the reproduction of fleas is greatest. Some trades have more pneumonias than others, principally those that are more exposed to the bites of the parasites.

The conclusions of the writer are that he firmly believes in the possibility of this mode of contagion. It is true that it is not the only means of infection by the pneumococcus, but wherever fleas have passed the microbe can be found.

Another vengeance of the little ones against us! Bites of fleas are already much disliked, certainly this new theory of the infection of pneumonia will not make them any less disagreeable, and in our days of pulmonary pest they will certainly be considered as much more than that!

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BIOGRAPHICAL NOTES.—“*Le Cheval de Course*” (The race horse) is a new book published here by J. Q. Bailliere and Son.

Written by two veterinarians, M. M. Gobert and Cagny, this work, although it may be considered as a new departure for veterinary writers to bring out, is one which will be read by members of that profession, as well as by horsemen, taking the word in its broadest sense (breeders, stock raisers, trainers and also practitioners) as in the 500 pages that the book contains lots of pleasant reading, of interesting facts, practical and theoretical are treated in such manner that not only one will enjoy the perusal of the work but also gain knowledge by it.

The work is divided in two parts. In the first, Breeding is treated at large. Haras, selection of the reproducers, the mares as well as the stallions, the hygiene of both and that of the foals, with the peculiar disease of these three different unities.

In the second part the subject of training forms the principal portion. The feeding and its modifications according to the requirements of condition, the conditions of the race horse, the doping, shoeing—all these parts have received by the authors a careful attention, for which in fact they have been well prepared by a long practice among this class of horses. This part is completed with the examinations of the various diseases which might be said are proper to the race horse, these being considered, however, in a general way and without any attempts to interfere with the general practitioner and its being required.

Thirty-nine illustrations add considerable interest to the various chapters of this interesting little work.

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TRATTATO DI TECNICA E TERAPEUTICA CHIRURGICA, GENERALE E SPECIALE (Treatise of General and Special Surgery), by Prof. Doct. Lanzillotti-Buonsanti, the learned Director of the High Veterinary School of Milano.

This is the second part of volume III. of this important work, to which in previous occasions the REVIEW has referred already. It treats of the technical and therapeutic surgery of the upper half of the thoracic extremity and is divided into nine chapters. In the first the bandaging in general, in the second the operations demanded for the ailments of the cutaneous and muscular system of the shoulder and arm, in the third those relating to diseases of the nervous apparatus, in the fourth those of the scapula and humerus proper and their articulations. Chapter V. treats of shoulder lameness. The sixth of the care required for similar troubles of the elbow and fore-arm. In the seventh the affections of the cubitus and of the radius. In the eighth the operations connected with lesions of the carpus and in the

last median neurotomy. The balance of the work will be completed with four more parts, one treating of the upper half of the hind extremity, another of the tibial region, hock and two first phalanx, a third on the surgery of the foot and the last on amputations and dislocations. All those parts, like the preceding, will be illustrated by numerous photographs.

When completed this book will no doubt form one of the finest of Italian veterinary literature.

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I have also just received No. 2 of Volume IX. of the Chicago Veterinary College Bulletin. The December, 1910, number.

A. L.

THE DIAGNOSIS OF GLANDERS BY COMPLEMENT FIXATION.

The early diagnosis of glanders constitutes one of the most important and difficult tasks which confronts the veterinarian engaged in sanitary work. In those instances where there are no positive indications of the disease, it is impossible to establish a diagnosis by physical examination, and only through the aid of some special diagnostic method or test can there be any hope of determining the presence or absence of the disease. Horses affected with occult or latent glanders, and in which the disease is not suspected, are undoubtedly great factors in the propagation of the infection. Indeed, there are many glandered horses which do not show positive symptoms until later stages of the disease.

The first important step toward determining obscure and latent cases of glanders was made by the discovery of mallein. There are, however, a considerable number of glanderous ani-

mals in which the mallein fails to give a typical reaction, and, on the contrary, a reaction may follow the injection of mallein in the absence of glanders. The mallein is not an entirely reliable diagnostic agent for determining glanders, nor has it ever been considered as efficacious in the detection of this disease as tuberculin for the diagnosis of tuberculosis.

With the application of the agglutination test for glanders it appeared that a more satisfactory method had been found for the diagnosis of all types of infection with this disease.

While there is no doubt that the agglutination test is of great value in all cases of recent infection, nevertheless extensive experience has proved that horses affected with chronic glanders give occasionally a very low agglutination value, which in some cases is even lower than that of normal blood serum. From this condition it appears evident that in certain cases of chronic glanders the disease can be determined only by repeated tests, and a diagnosis in such cases is only possible from the fluctuation of the agglutination value—either an increase or a decrease—as it is a well-known fact that this value remains stationary in normal horses. Therefore, the agglutination test alone does not constitute an entirely satisfactory diagnostic method for glanders. However, as its great value has been proved beyond doubt in the early cases of infection, it may well be utilized as an adjunct to any other test which may be applied in connection with the diagnosis of suspected cases of the disease.

In 1909 Schutz and Schubert published the results of their important work on the application of the method of complement fixation for the diagnosis of glanders. And since their experiments were followed by splendid results, exceeding by far the results obtained from either the mallein or the agglutination test, they recommended that this method of diagnosis in combination with the agglutination test be taken as the official test in Germany. This method, overcoming as it does the disadvantages of the mallein and agglutination tests, constitutes without doubt the most reliable method for the diagnosis of glanders which we have at our command at the present time. The complement-fixa-

tion test is, in fact, the most definite method known for determining specific infections and is as nearly perfect as a biological test can be. It has only recently been introduced in veterinary science and the publications concerning it are at present limited to foreign periodicals.

This new method of diagnosing glanders which has given most favorable results in Germany, and constitutes at the present time the official test of Prussia and other parts of Germany, is described and discussed by Drs. John R. Mohler and Adolph Eichhorn in a bulletin (No. 136, B. A. I.) recently issued by the United States Department of Agriculture on "The Diagnosis of Glanders by the Complement Fixation."

Since this method of diagnosis for glanders was inaugurated in the laboratory of the Bureau of Animal Industry, large numbers of horses and mules have been examined in the District of Columbia as well as animals for other parts of the United States.

The results of the tests thus far conducted show that at least 97 per cent. of the cases of glanderous affections can be determined by the complement-fixation method.

The serum of glanderous horses contains immune bodies which develop during the course of the disease. The presence of these immune bodies in the serum is utilized in the development of the test. The necessary quantity of the serum for the test has been established through the painstaking experiments of Schutz and Schubert.

The substances which are used in making the test are described in the bulletin, their method of preparation and the detail as to the conduct of the tests are given with minuteness, and the reactions which take place are interpreted in terms of the amount of hæmolysis, that is, the reaction which takes place when the red blood corpuscles of one animal are introduced into another of a different species and are dissolved by its blood.

Thus the test tubes may show, either complete hæmolysis, incomplete hæmolysis or no hæmolysis whatever. The fixation of the complement is manifested by the absence of hæmolysis and

therefore indicates without doubt the presence of glanders. On the other hand, if the tubes show complete hæmolysis, the absence of glanders is indicated.

In the presence of glanders a fixation of the complement takes place as a result of anchoring the immune bodies and antigen, which, in the absence of glanders, there being no immune bodies present, the complement is used up in the phenomenon of hæmolysis.

The Department's experience as well as the work of the German scientists shows that the results of the complement-fixation tests should be interpreted as follows:

1. Horses in which the serum produces a complete fixation of the complement should be considered as glanderous.
2. Horses in which the serum gives an incomplete fixation of the complement should be considered as glanderous.
3. Only horses in which the serum shows no fixation of the complement are to be considered free from glanders.

Animals affected with glanders will give a positive reaction. Normal animals otherwise affected with diseases other than glanders will give no reaction.

UNIFORMITY OF VETERINARY DEGREES.

No one can read, in the present number, the conclusion of Dr. Schwarzkopf's article on uniformity of veterinary degrees begun in the April number, without being impressed with his earnestness, his lack of prejudice, the wonderful fund of information he has upon the subject and the very great amount of study he has given the matter. We scarcely hoped when we asked the members of the American Veterinary Medical Association and of the profession generally to make suggestions that would lead to a definite action on this important matter at the coming convention, that anyone stood ready with so much to offer that would seem to elucidate the most knotty questions and

finally lead up to a resolution to the Secretary of Agriculture. It seems another demonstration of the old adage that there is always a back for the burden. Aside from his fund of knowledge on the subject, which has made it possible for Dr. Schwarzkopf to treat it so fully and thoroughly, the doctor is peculiarly suitable to write on the subject because of the fact, that, while he has been a member of the American Veterinary profession for twenty-six years, and is, therefore, thoroughly familiar with the condition and needs of the profession in America, yet he is not an American graduate and holds no American degree; nor is he prejudiced for or against any particular college or degree. He has weighed the evidence carefully and dispassionately and looked at it from every viewpoint, and has finally arrived at the D. V. M. degree by elimination. We are sure that his efforts will be thoroughly appreciated by President Glover and the entire membership of the American Veterinary Medical Association, and that his contribution will stir into action the entire veterinary profession of America on this subject of primary importance to our profession.

THE A. V. M. A. AT TORONTO IN AUGUST.

In this month's issue of the REVIEW under the head of correspondence, our readers will find a communication from Principal E. A. A. Grange, of the Ontario Veterinary College, chairman of the local committee of arrangements of the American Veterinary Medical Association. In the communication Chairman Grange, with true Canadian thoroughness, has laid the foundation for what promises to be the most largely attended and most successful meeting in the history of the association. Our readers will see that the committee is well prepared to entertain a very large gathering. In our next issue we will erect upon this foundation, the frame-work of the 1911 meeting; the outline of the program, plans for entertainment, etc., and in

the July number round out the complete program. We learn from Secretary Marshall that the members having charge of the several divisions of the program are making progress, and from present indications, we should have one of the best literary programs yet offered. Dr Rutherford, who has charge of the division on Sanitary Police Measures, has announced to the secretary that he has promises of papers from Drs. R. G. Hickman, Paul Fischer, W. H. Dalrymple and C. D. McGilvray. Dr. John R. Mohler, who has charge of the division of Pathology and Bacteriology, has papers promised from Drs. E. C. Schroeder, W. E. Cotton, Adolph Eichhorn, John Reichel and Karl F. Meyer. The subject of the paper to be presented by Drs. Schroeder and Cotton (jointly), is, "An Undescribed Pathogenic Bacterium in Milk." Dr. Eichhorn's paper will be on "Immune Bodies and Biological Reactions." Dr. Reichel's subject is "Preventive Treatment of Rabies in Animals." Dr. Karl F. Meyer will present a paper on "The Pathology of Nephritic Affections in Domesticated Animals." The above subjects treated by the men whose names accompany them is surely a literary treat in itself, and that comprises only one division. Prepare for Toronto now.

WHY NOT A SPECIAL TRAIN TO TORONTO FROM NEW YORK?

With the pleasant memories of the recent trip to the Coast on the American Veterinary Special, it has occurred to us that much pleasure and convenience could be added to the trip to Toronto by running a special train from New York. This train would not only be convenient to members from New Jersey, Eastern Pennsylvania and the New England States, but could be used advantageously by members from the West who desired to spend a few days, or even hours, in the American metropolis en route to the convention city. They could procure tickets from their homes to New York and return over the roads most con-

venient to them, and join the Eastern members on the "Special" from New York. The New York Central has a train leaving New York at 6.30 P. M. and arriving in Toronto at 8.40 the following morning. Or an early morning train might be arranged for, arriving in Toronto on the evening before the opening of the convention. The fare over this road would be \$10.25; berths, \$2.50; lower, \$4.50 for section, and \$9 for drawing room. Returning, those with time to spare and not wishing to return direct, may return by way of Thousand Islands, St. Lawrence River, Montreal, Quebec, thence through the White Mountains, or by way of Niagara Falls, Adirondack and Green Mountains.

We merely make this as a suggestion at this time, but if it meets with the approval of the local committee and is welcomed by the members, the REVIEW will do everything in its power to bring it to maturity. Mr. Frank C. Foy, the Canadian agent of the New York Central Lines, is accessible to the Chairman of the Local Committee, and our proximity to the headquarters in the city out of which the special would run, would make it possible for us to render the committee material aid. Let us have an expression from the committee and the members.

SECRETARY YARD, of the State Veterinary Examining Board of Colorado, announces that the midsummer meeting of the board, for examination of graduates will be held at Denver, June 6 and 7.

WE are in receipt of a copy of the Fourteenth Annual Report of the United States Live Stock Sanitary Association, which includes in its membership leading Federal and State Sanitary Live Stock officials. It is of great value to every one interested in improvement of general live stock conditions, live stock transportation and marketing. It also contains a large amount of useful information to every one engaged in the live stock business. The articles, addresses and discussions published are reported so that farmers and stockmen may easily understand them. The report is for general distribution, and can be had from the secretary, J. J. Ferguson, Union Stock Yards, Chicago, at \$1 per copy.

ORIGINAL ARTICLES.

SOME RECENT EXPERIMENTS ON INFECTIOUS ANAEMIA OF THE HORSE.

BY M. FRANCIS AND R. P. MARSTELLER, COLLEGE STATION, TEXAS.

In Bulletin 119 of the Texas Experiment Station there appears an account of a serious and fatal disease of horses and mules in which the most prominent symptoms are a progressive emaciation with periodical attacks of fever.

It seems quite probable that the disease is identical with what has been known for years as "swamp fever" in the Middle West. The authors made some effort to find the specific character of the disease by inoculation of horses, mules, cattle, pigs, sheep, goats and dogs, and found all but horses and mules were not susceptible. They made a large number of examinations of the blood for protozoa and bacteria, and attempted to cultivate a germ from the infected blood by the usual methods employed in bacteriology, but all their efforts were fruitless. They even passed virulent blood through a porcelain filter and found that the filtrate is infectious. As it is now more than two years since the bulletin appeared, and as during this period infected animals have been under daily observation, it would seem that the results of some experiments may be of interest to other workers in the same field.

EXPERIMENT I.

This experiment was made to ascertain how the infection spreads from one animal to another under natural conditions. In May, 1908, we put a middle-aged pony, named "Richard," in the same lot with several infected horses and mules. They associated with each other, ate from the same manger, drank from the same trough, and grazed together in a small pasture

containing about eight acres, for more than two years. During this time daily observations were made of the temperature of "Richard" and at no time did we find it beyond the limits of normal variation. As he had apparently every possible opportunity to contract the disease, but had not done so, the suggestions arose that he might have been already infected before the experiment began, or that he was immune to the disease. To eliminate the former possibility two horses were injected with his blood, both of which remained well. There remained the latter point to be cleared up. On June 30, 1910, which was more than two years since the experiment began, we injected him with 3 c.c. of blood from an infected mule. High fever began on the twelfth day and again on the twenty-third day, which proved fatal.

TEMPERATURE RECORD OF "RICHARD."

1910.		Remarks.
Date.	Temperature.	
June 30	.....	Injected with 3 c.c. virulet blood, subcutaneously.
July 1	100.2	
July 2	100.6	
July 3	100.4	
July 4	99.6	
July 5	100.	
July 6	99.8	
July 7	100.4	
July 8	100.6	
July 9	100.4	
July 10	100.6	
July 11	102.4	
July 12	104.8	
July 13	106.2	
July 14	106.4	
July 15	106.4	Injected 200 c.c. of a 2% solution of Trypan blau into jugular vein.
July 16	101.	Eats well. Mucous membranes blue.
July 17	100.8	No swelling at point of injection.
July 18	100.4	
July 19	100.	
July 20	100.	
July 21	100.4	
July 22	101.	
July 23	104.8	Gave 5 gms. Trypan blau intravenous in 250 c.c. sterile water.
July 24	106.	Mucous membranes very blue.
July 25	105.	Very sick, won't eat, petechiæ on conjunctiva.
July 26	....	Dead.

EXPERIMENT II.

Having seen that a healthy horse associated for more than two years with diseased ones, during which period it ate and drank from the same troughs, we now decided to ascertain whether or not a horse can be infected through the digestive tract.

On November 26, 1908, we drew four ounces of virulent blood from the jugular vein of Horse 11, which was at this time having an acute attack of infectious anæmia. (See Bulletin 119, page 19.) This was immediately injected into the back part of the mouth of Horse 12 with the ordinary dose syringe. Note the following data:

Date.	Temperature.	Remarks.
1908.		
November 26	98.	
November 27	99.4	
November 28	99.	
November 29	99.4	
November 30	99.8	
December 1	99.6	
December 2	99.	
December 3	98.8	
December 4	98.8	
December 5	98.6	
December 6	99.	
December 7	98.8	
December 8	100.2	First Reaction.
December 9	101.8	
December 10	102.6	
December 11	102.	
December 12	99.8	
December 13	98.	
December 14	98.4	
December 15	100.	
December 16	102.6	Second Reaction.
December 17	102.4	
December 18	101.8	
December 19	98.4	
December 20	98.	
December 21	99.	
December 22	98.6	
December 23	98.4	
December 24	98.4	

Date.	Temperature.	Remarks.
1908.		
December 25	98.2	Third Reaction.
December 26	99.4	
December 27	99.8	
December 28	102.	
December 29	103.8	
December 30	103.	
December 31	103.	
1909.		
January 1	100.4	Fourth Reaction.
January 2	100.	
January 3	99.4	
January 4	98.4	
January 5	98.4	
January 6	97.8	
January 7	98.6	
January 8	98.4	
January 9	99.2	
January 10	101.8	
January 11	102.	
January 12	104.2	
January 13	105.2	
January 14	105.2	
January 15	102.6	
January 16	101.	Gave 4 oz. of blood to horse 13.
January 17	101.6	Fifth Reaction.
January 18	99.2	
January 19	98.6	
January 20	98.6	
January 21	100.2	
January 22	100.	
January 23	100.2	
January 24	100.4	
January 25	100.	
January 26	99.6	
January 27	99.6	
January 28	99.4	
January 29	98.6	
January 30	99.	
January 31	101.4	
February 1	103.	
February 2	105.2	
February 3	105.	
February 4	103.6	
February 5	101.	
February 6	100.2	
February 7	98.8	
February 8	99.	
February 9	99.6	
February 10	98.	
February 11	98.8	

Date.		Temperature.	Remarks.
1908.			
February	12	99.6	
February	13	99.6	
February	14	98.	
February	15	98.	
February	16	100.6	
February	17	98.	
February	18	100.	
February	19	100.	
February	20	100.4	
February	21	103.2	
February	22	105.	Sixth Reaction.
February	23	103.8	
February	24	100.6	
February	25	100.6	
February	26	99.6	
February	27	98.8	
February	28	101.6	
March	1	99.2	
March	2	99.4	
March	3	99.2	
March	4	99.8	
March	5	100.6	
March	6	102.	
March	7	102.4	
March	8	102.	Seventh Reaction.
March	9	102.	
March	10	102.6	
March	11	102.6	
March	12	100.4	
March	13	101.	
March	14	100.	
March	15	99.	
March	16	100.	
March	17	100.2	
March	18	100.	
March	19	99.	
March	20	100.4	
March	21	101.4	
March	22	101.	Eighth Reaction.
March	23	102.6	
March	24	Dead.	

On January 16, 1909, just at the close of the fifth reaction, we drew four ounces of blood from the jugular vein of Horse 12 and immediately injected into the mouth of Horse 13, with the ordinary dose syringe. This caused the death of Horse 13 on April 10.

Please follow this record of Horse 13:

Date.	Temperature.	Remarks.
1909.		
January 16	99.	
January 17	99.	
January 18	99.	
January 19	98.8	
January 20	98.4	
January 21	99.6	
January 22	99.	
January 23	99.2	
January 24	98.6	
January 25	98.4	
January 26	98.4	
January 27	98.	
January 28	98.	
January 29	98.	
January 30	97.8	
January 31	99.4	
February 1	98.4	
February 2	98.	
February 3	99.	
February 4	99.	
February 5	98.2	
February 5	98.	
February 7	98.	
February 8	99.	
February 9	98.4	
February 10	98.	
February 11	104.8	First Reaction.
February 12	101.	
February 13	100.	
February 14	99.8	
February 15	100.	
February 16	100.6	
February 17	101.	
February 18	102.6	
February 19	101.6	
February 20	100.8	
February 21	101.6	
February 22	101.	
February 23	101.8	Second Reaction.
February 24	101.2	
February 25	100.8	
February 26	103.6	
February 27	103.6	
February 28	101.6	
March 1	99.8	
March 2	99.8	
March 3	99.6	
March 4	99.	

Date.		Temperature.	Remarks.
1909.			
March	5	99.2	Third Reaction.
March	6	102.	
March	7	105.4	
March	8	104.3	
March	9	103.	
March	10	102.4	
March	11	103.	
March	12	103.6	
March	13	102.4	
March	14	101.6	
March	15	102.8	
March	16	103.6	
March	17	101.6	
March	18	101.6	
March	19	102.4	
March	20	102.2	
March	21	101.	
March	22	100.	
March	23	102.	
March	24	99.6	
March	25	100.	
March	26	102.	
March	27	101.8	
March	28	102.	
March	29	101.8	
March	30	101.4	
March	31	100.	
April	1	100.6	
April	2	98.	
April	3	99.6	
April	4	98.	
April	5	100.	
April	6	100.6	
April	7	100.8	
April	8	100.2	
April	9	100.6	
April	10	Dead.	

On March 25 we gave another horse four ounces of blood via mouth from Horse 13, but this failed to infect him, though we recorded his temperature daily for seven months.

Surely no one who reviews this data can doubt that infection may occur through the digestive tract.

EXPERIMENT III.

Every one who has lived for some time in Texas must have frequently noticed that some horses become badly infested with cow ticks in the summer time, while others are almost free from them. This led us to a trial of collecting ticks from a horse whose blood we knew to be virulent and after hatching the young ticks in the laboratory, to try to infect another horse by placing the young ticks on it.

September 23, 1910, we collected about twenty mature female ticks (*Boöphilus annulatus*) from a horse infected with infectious anæmia. These were taken to the laboratory and kept in a glass dish, in a subdued light. Egg laying began at the usual time and in fifty or sixty days the vessel contained thousands of larvæ. On November 21, which was a warm, pleasant day, we emptied the ticks on a woolen blanket and then fastened the blanket to a horse's body, so as to bring the young ticks in contact with the skin along the belly, breast, and about the elbows. We left this on twenty-four hours, so as to insure warmth and contact. On removal of the blanket there were hundreds of small lumps on the skin, each containing a dozen or so erect hairs, where it seemed the young ticks must have bitten the horse. These lumps passed away in three or four days. The horse was kept isolated and his temperature recorded daily for seventy days, but no signs of sickness followed the experiment.

EXPERIMENT IV.

The periodical attacks of fever in this disease are very similar to those observed in malaria of man, and in diseases due to piroplasma. As quinine is quite successful in malaria we decided to try it on infectious anæmia. In this experiment the bisulphate was given in capsules via mouth.

On June 29, 1910, a ten-year-old mule, we will call "Stasney," was injected subcutaneously with 2 c.c. of virulent blood. The mule was in good physical condition, except a large ringbone for which he had been "nerved."

His record is as follows:

Date.		Temperature.	Remarks.
June	29	100.	
June	30	100.2	
July	1	100.	
July	2	100.2	
July	3	98.8	
July	4	98.6	
July	5	99.	
July	6	99.2	
July	7	98.8	
July	8	99.6	
July	9	99.2	
July	10	99.2	
July	11	99.6	
July	12	99.	
July	13	99.4	
July	14	100.6	
July	15	100.2	
July	16	100.	
July	17	99.	
July	18	99.	
July	19	99.	
July	20	99.6	
July	21	101.	
July	22	100.	
July	23	100.2	
July	24	99.6	
July	25	100.6	
July	26	103.4	
July	27	105.	
July	28	100.6	
July	29	99.6	
July	30	98.6	
July	31	100.4	
August	1	103.4	
August	2	103.	
August	3	103.	
August	4	100.	
August	5	100.	
August	6	100.	
August	7	100.6	
August	8	99.4	
August	9	99.6	
August	10	102.	
August	11	99.6	
August	12	99.6	
August	13	100.6	
August	14	101.	
August	15	100.4	
August	16	100.	
August	17	102.	

Date.		Temperature.	Remarks.
August	18	104.	
August	19	105.	Gave $\frac{1}{2}$ oz. Bisulphate of Quinine.
August	20	103.6	Gave $\frac{1}{2}$ oz. Bisulphate of Quinine.
August	21	103.4	Gave $\frac{1}{2}$ oz. Bisulphate of Quinine.
August	22	101.2	Gave $\frac{1}{2}$ oz. Bisulphate of Quinine. Don't eat.
August	23	100.6	Gave $\frac{1}{2}$ oz. Bisulphate of Quinine. Mopes around.
August	24	99.	Gave $\frac{1}{2}$ oz. Bisulphate of Quinine. Losing flesh.
August	25	99.	Gave $\frac{1}{2}$ oz. Bisulphate of Quinine.
August	26	98.	Gave $\frac{1}{2}$ oz. Bisulphate of Quinine.
August	27	100.	Gave $\frac{1}{2}$ oz. Bisulphate of Quinine.
August	28	104.	No Quinine. Mule sick.
August	29	100.6	
August	30	99.6	
August	31	100.	

From September 1 the temperature remained within the limits of normal variation and continued so about twenty days. As a result of accident the foot affected with ringbone became swollen, the hoof sloughed off, and the animal was destroyed. The experiment was not a satisfactory one. The indications were that quinine produced an arrest of the fevers in this instance. Further trials should be made along this line.

EXPERIMENT V.

This was a trial of the preparation called "Atoxyl," which has recently been used with some success for infections with trypanosoma in Africa. It was dissolved in freshly boiled water, after it had been cooled to blood heat, then injected subcutaneously. Symptoms of arsenical poisoning were not observed as they were in some experiments made on cattle for Texas fever. The experiment was as follows: January 17, 1910, a middle aged bay gelding we called "Currie," was given five c.c. of virulent blood subcutaneously.

The record follows:

Date.	Temperature.	Remarks.
January 17	97.8	
January 18	98.8	
January 19	98.	
January 20	99.	
January 21	98.6	
January 22	98.6	
January 23	98.2	
January 24	98.4	
January 25	98.2	
January 26	98.4	
January 27	98.2	
January 28	98.	
January 29	97.6	
January 30	99.	
January 31	100.6	
February 1	104.6	
February 2	104.	
February 3	100.8	
February 4	101.2	
February 5	100.8	
February 6	101.	
February 7	100.4	
February 8	99.4	
February 10	99.	
February 11	99.6	
February 12	99.	
February 13	97.8	
February 14	100.	
February 15	103.4	
February 16	103.4	Gave 2½ grms. Atoxyl in 50 c.c. water subcutaneously.
February 17	101.6	
February 18	100.8	Repeated the Atoxyl.
February 19	101.8	
February 21	102.	Repeated the Atoxyl.
February 22	101.	
February 23	100.8	
February 24	101.	
February 25	101.4	
February 26	104.6	Repeated the Atoxyl.
February 27	103.6	Repeated the Atoxyl.
February 28	102.	Repeated the Atoxyl.
March 1	102.4	Repeated the Atoxyl.
March 2	103.6	Repeated the Atoxyl.
March 3	102.8	Repeated the Atoxyl.
March 4	101.4	Dead.

A careful post-mortem examination was made, but we were unable to say that the cause of death was poisoning, with atoxyl.

It seemed to us that atoxyl had failed to be of value for infectious anaemia of the horse.

EXPERIMENT VI.

On June 30, 1910, a twelve-year-old sorrel mare, we may call "Boriski," was given subcutaneously fifteen c.c. of porcelain-filtered blood from a mule whose blood was known to be virulent. When the fever reactions occurred we gave intravenous injections of a solution of trypan roth (Gruebler) to see what the result would be. The daily record follows:

Date.	Temperature.	Remarks.
July 1	100.	
July 2	99.6	
July 3	99.2	
July 4	99.	
July 5	99.	
July 6	99.6	
July 7	99.4	
July 8	99.6	
July 9	100.4	
July 10	101.6	
July 11	102.4	
July 12	102.4	Sick, mopes around.
July 13	103.	Sick, indifferent towards food.
July 14	103.	Gave 200 c.c. of a 2% solution of trypan roth, intravenous.
July 15	101.6	Urine red.
July 16	100.6	
July 17	101.2	
July 18	100.4	Eats grass only.
July 19	103.4	Repeated the trypan roth. Don't eat.
July 20	103.4	Repeated the trypan roth. Passed one gallon red urine.
July 21	104.	Don't eat, passing red urine, mucous membranes red.
July 22	104.6	Eats some to-day.
July 23	104.2	Gave 5 grammes trypan roth in 250 c.c. water.
July 24	104.	Won't eat. Mucous membranes red as losin.

Date.		Temperature.	Remarks.
July	25	103.8	No local swelling at point of injection.
July	26	103.8	Eats some, seems better to-day.
July	27	102.4	
July	28	101.2	
July	29	101.6	Eats fairly well; mucous membrane pink yet.
July	30	101.6	
July	31	103.8	
August	1	.....	Urine clear again. Mucous membrane becoming normal color.
August	2	102.8	
August	3	102.4	Anus relaxed, becoming weaker.
August	4	102.8	Urine pink yet.
August	5	102.6	Looks sick, mopes around.
August	6	101.	
August	7	103.4	Anus relaxed, frequent urination.
August	8	102.	
August	9	101.6	Won't eat sorghum. Fed bran and chops.
August	10	103.2	Becoming weaker every day.
August	11	102.4	
August	12	102.6	
August	13	101.2	
August	14	101.2	Down, can't get up.
August	15	Dead.	

This experiment shows two things:

First—That the virulent principle may pass through a fine porcelain filter.

Second—That trypan roth, as we used it, is of no value as a curative agent in this disease.

EXPERIMENT VII.

This is an experiment to ascertain the value of trypan blau (Gruebler) as a remedy for infectious anæmia of the horse.

January 15, 1910, a large grey mule we call "Langley" was given five c.c. of virulent blood subcutaneously and the tempera-

ture taken and recorded daily. We omit the long intervals of normal temperature:

Date.		Temperature.	Remarks.
February	6	104.2	First Reaction. No Medicines Given.
February	7	100.6	
March	29	102.6	Second Reaction. Injected 100 c.c. of a 2% solution of trypan blau into jugular vein. Thirty minutes after the injection he passed blue urine, but no sickness or swelling at the point of injection followed.
March	30	103.2	
March	31	101.6	
May	2	100.8	Third Reaction. No Medicine Given.
May	3	102.8	
May	29	100.4	Fourth Reaction. No Medicine Given.
May	30	104.2	
May	31	103.	
June	1	102.6	
June	2	101.	Fifth Reaction. Injected 200 c.c. of a 2% solution of trypan blau into jugular vein.
June	28	104.8	
June	29	104.8	
June	30	103.8	
July	1	101.2	Sixth Reaction. No Medicines Given.
August	28	104.4	
August	29	104.6	
August	30	103.	
September	22	104.2	Seventh Reaction. No Medicines Given.
September	23	104.2	
September	24	103.6	
September	25	103.6	
September	26	101.2	
October	23	100.8	Eighth Reaction. Injected 8 grammes trypan blau, dissolved in 400 c.c. distilled water in jugular vein.
October	24	103.6	
October	25	105.	
October	26	103.4	
October	27	102.	
December	22	100.	Ninth Reaction. No Medicines Given.
December	23	101.2	
December	24	102.6	
December	25	104.6	
December	26	103.4	
December	27	102.2	
December	28	101.	
December	29	101.2	
December	30	100.4	Tenth Reaction. Injected 10 grammes of trypan blau dissolved in 500 c.c. sterile water into jugular vein.
February	5	101.6	
February	6	106.	
February	7	105.	
February	8	102.	

The next day after making the injection we found the mule indifferent towards food. The mucous membranes were as blue as indigo, sub-mucous hemorrhages visible on the eyelids, and some swelling about the chest, but no swelling at the point of injection. In ten days the mucous membranes became about normal in color and the mule was eating as usual.

To review this experiment, we find that we have injected into this mule's blood:

First Dose, March 30	2 grammes in 100 c.c. water
Second Dose, June 30	4 grammes in 200 c.c. water
Third Dose, October 25	8 grammes in 400 c.c. water
Fourth Dose, February 6	10 grammes in 500 c.c. water

No marked sickness followed these injections. This mule is fed daily on corn chops and prairie hay, but he is losing flesh and strength and will probably die within sixty days.

* * * * *

On June 30, which was during the fifth reaction, we injected 3 c.c. of this mule's blood under the skin of a horse we call "Richard," described in Experiment I., which caused the death of the horse twenty-six days later.

On the same day we filtered some of the mule's blood through a fine porcelain filter and injected 15 c.c. of the filtrate under the skin of a mare, which caused her death in six weeks. (See Experiment VI.) These two experiments were made before the trypan blau was injected into the mule.

On October 25, which was during the eighth reaction, we made the third injection of trypan blau. Eight days later we wished to know if the blood was virulent so soon after receiving this injection. To decide this point, we injected $2\frac{1}{2}$ c.c. of the "Langley" mule's blood into another mule we call "Froberg." The Froberg mule was kept isolated from all other animals and fevered three weeks later, showing

Date.	Temperature.	Remarks.
October 23	102.4	First Reaction.
October 24	104.	
October 25	101.	
December 14	102.	Second Reaction.
December 15	101.6	
December 16	101.	
January 11	101.	Third Reaction.
January 12	104.6	
January 13	101.	

A study of the foregoing data shows that trypan blau, as we used it, to be of no value in checking infectious anæmia of the horse.

To review these experiments briefly we find that:

Experiment I. shows that a healthy horse associated more than two years with others sick with infectious anæmia without becoming infected.

Experiment II. shows that they may be infected through the digestive tract.

Experiment III. shows that in this instance we failed to transmit it with ticks whose parents had matured on an infected horse.

Experiment IV. shows some encouragement from the use of quinine. This should be repeated.

Experiment V. shows that atoxyl failed in this instance.

Experiment VI. shows that intravenous injections of trypan blau to be of doubtful value.

Experiment VII. shows that intravenous injections of trypan blau to have failed to arrest the disease.

PROF. W. REID BLAIR, of the Veterinary Department of New York University (New York-American Veterinary College), gave a stereopticon talk to the students at the New York State Veterinary College, Ithaca, on April 14. We congratulate the students at Cornell in having Dr. Blair, who is Professor of Comparative Pathology at the New York-American Veterinary College, and Veterinarian and Bacteriologist to the New York Zoological Park, address them.

THE PROBLEM OF A UNIFORM VETERINARY DEGREE FROM THE STANDPOINT OF HISTORICAL DEVELOP- MENT AND AMERICAN NEEDS.

BY OLAF SCHWARZKOPF, VETERINARIAN THIRD CAVALRY, U. S. ARMY.

[Continued from page 35.]

THE DEGREES OF THE VETERINARY SCHOOLS OF NORTH AMERICA.

The foregoing explanation of the historical origin and development of veterinary titles and degrees in Europe appeared necessary to show that they were largely dependent upon locality and the influence of time. These causes were also at work in the choice of the veterinary degrees by our American colleges, which exhibit interesting succession stages from the simplest title available to the presumptuous degree chosen without precedent or much judgment. Let us see how they came about.

In 1853 George Dodd started a veterinary college in Boston. It had no regular curriculum and but few students, as the need of veterinary colleges was still unknown in this country. The pupils of this school, in going into practice, signed behind their names V.S., indicating thereby the importation of the title from Great Britain.

In 1857 the New York College of Veterinary Surgeons was organized in New York City. It had a hard struggle for existence, but managed to live. The experience of this college paved the way for others to come and do better. The course extended only over two winter sessions, and the graduates were satisfied with the simple title veterinary surgeon (V.S.).

About 1862 the Board of Agriculture of upper Canada asked Professor Dick, of Edinburgh, to recommend a capable veteri-

narian to organize a veterinary college and Andrew Smith, V.S., was selected, emigrated and arranged a veterinary course of two winter sessions. This school had a steady growth and became the first successful veterinary college in America. Her early graduates, although lacking in education, spread all over North America, doing pioneer work in the cause of veterinary development. The graduates received the title of veterinary surgeon (V.S.).

In 1866 the Board of Agriculture of Quebec founded a veterinary college in Montreal, which was soon afterwards connected with McGill University. Under the guidance of the progressive principal, Ch. McEchran, F.R.C.V.S., it announced the first three-years' graded course, and the graduates received the degree of doctor of veterinary surgery (D.V.S.). The writer was informed, years ago, that this entirely new veterinary degree was chosen for its similarity to the degree of doctor of dental surgery (D.D.S.), because the medical faculty objected to a degree which would appear similar to the degree of doctor medicinæ. At any rate, this was the first veterinary doctor degree created on this continent, and was soon imitated by other colleges.

Also in 1866 Professor James Law, M.R.C.V.S., was added to the faculty of Cornell University, N. Y., and besides lecturing to agricultural students, he arranged a veterinary course. Four of the veterinary graduates received the degree of bachelor of veterinary medicine (B.V.M.), and one the degree of doctor of veterinary medicine (D.V.M.), after taking a four-years' course. The selection of these degrees proves historical study of veterinary medicine.

In 1875 the American Veterinary College was opened in New York City, and Professor A. Liautard, a French graduate, was made its dean. The college excelled from the start in the teaching of anatomy and surgery, and served as a literary centre for veterinary progress in this country. This college preferred the degree of doctor of veterinary surgery (D.V.S.).

The State Agricultural College of Ames, Iowa, opened a veterinary school in 1879, with Professor M. Stalker as dean. It was the first school to start and adhere to a full three-years' course of nine months each, and numerous excellent country practitioners have come from its ranks. The degree chosen was that of Cornell University, doctor of veterinary medicine (D.V.M.).

In 1883 the Chicago Veterinary College was started by Drs. A. H. Baker, V.S.; Joseph Hughes, M.R.C.V.S., and others. The initial degree given by this college was D.V.S., but in 1890 it was changed to that of doctor of comparative medicine (M. D. C.), and as reported this was done in compliance with a petition of the students of the college.

In the same year Harvard University, Boston, opened a veterinary department with Professor Ch. Lyman, M.R.C.V.S., as dean. The course was of three years duration. The senate of the university conferred upon the graduates the degree of *medicinæ doctoris veterinariæ* (M.D.V.), corresponding to the formula in use for the degree *medicinæ doctoris*. This was the first veterinary degree written in Latin, and had it been worded in accordance with the historical European formula, it would have saved later colleges from attempting to correct it. As it was it started the mixing up of the different degrees of doctor of veterinary medicine.

In 1884 a veterinary department was added to the University of Pennsylvania, with R. S. Huidekoper, M.D. (U. S.), V.S. (Alfort), as dean. It had from the beginning a three-years' graded course of nine months each, quite complete and thorough, and the school has yielded a strong influence for better in veterinary education. The degree conferred is that of *veterinariæ medicinæ doctoris* (V.M.D.), nearly a reversal of the Harvard degree.

The Ohio State University opened a veterinary school in Columbus in 1889, with Professor H. J. Detmers, a German graduate, as dean. It had, also, from the start, a three-years' graded course of nine months each, and steadfastly maintained a

high standard of instruction. The graduates receive the degree of doctor of veterinary medicine (D.V.M.).

In 1892 the Kansas City Veterinary College opened with Dr. S. Stewart, as dean. The degree given by the college is that of doctor of veterinary *science* (D.V.S.), the first degree in which the word science was used instead of surgery. A few of the graduates used the abbreviation D.V.Sc. in contradistinction to the degree of doctor of veterinary surgery.

The above comprise the earlier American veterinary colleges, from which the later-born adopted one or the other, perhaps with some minor changes.

Quite recently, however, a noteworthy action was taken in Canada as regards veterinary education and degrees. Similar to the action of Emperor William of Germany, King George V. of Great Britain decreed as follows:

"An Act Respecting the Ontario Veterinary College."

HIS MAJESTY, by and with the advice and consent of the Legislative Assembly of the Province of Ontario, enacts as follows:

I. This Act may be cited as "The Veterinary College Act." (It goes on to describe the continuance of the Ontario Veterinary College, the equipment of the college, the principal and officers, and the government and control of the college.)

Article 7, says: "Every student upon the successful completion of the course of study, upon passing the prescribed examinations, and upon satisfactory compliance with the rules and regulations of the college, shall be admitted to the standing of a Veterinary Surgeon and shall have all the privileges and rights accorded by statute to a Veterinary Surgeon, and there shall be issued to every such student a diploma granting him the title and standing of Veterinary Surgeon, such diploma to be attested by the signature of the Principal of the College and *the Minister of Agriculture.*"

(By this article the Ontario Veterinary College confers upon the graduates the title as a veterinary surgeon, V.S.)

Article 11 says: "The affiliation of the college with the University of Toronto is hereby approved, such affiliation to be to the extent of enabling the students of the said college to obtain at the examinations of the University such rewards, honors, standing, scholarships, diplomas and degrees in veterinary science as the University under its statutes and the acts of the legislature in that behalf may be allowed to confer."

By this authority the University of Toronto established the degree of Bachelor of Veterinary Science (B.V.Sc.) after three years' study and graduation, and the degree of Doctor of Veterinary Science (D.V.Sc.), after four years' study. The requirements of preliminary education for the degree of B.V.Sc. are as follows:

"English, history, arithmetic, together with any one of the following—Latin, French, German, or any two of the following—chemistry, physics, geometry, algebra."

The requirements for the doctor degree are as follows:

5. "A graduate holding the degree of Bachelor of Veterinary Science desiring to proceed to the degree of Doctor of Veterinary Science, shall apply to the Senate (of the University) for permission to undertake special research in a scientific laboratory or in some designated field of work allied to the live stock industry, and upon permission being obtained, he shall carry on special research and present a thesis, and upon the said thesis being approved by the Senate, the degree of Doctor of Veterinary Science shall be conferred upon said graduate, but only *after expiration of twelve months from the time of conferring the degree of Bachelor of Veterinary Science.*"

PRESENT DEGREES.

From direct information obtainable, the following are the present degrees of the veterinary colleges of North America:

Doctor of Veterinary Medicine—

Grand Rapids Veterinary College, Dr. of Vet. Med. . . D.V.M.

Indiana Veterinary College, Veterinary Medicine

Doctor V.M.D.

Iowa State Agricultural College, Vet. Dept., Dr. of Vet. Med.	D.V.M.	
Kansas State Agricultural College, Vet. Dept., Dr. of Vet. Med.	D.V.M.	
McKillip Vet. College, Dr. in Vet. Med.	M.D.V.	
N. Y. State Vet. School, Cornell University, Dr. of Vet. Med.	D.V.M.	
Ohio State University, Vet. Dept., Dr. of Vet. Med. .	D.V.M.	
University of Pennsylvania, Vet. Dept., veteri- nariæ medicinæ doctoris.	V.M.D.	
Total		8

Doctor of Veterinary Surgery—

New York-American Veterinary College.	D.V.S.	
San Francisco Veterinary College.	D.V.S.	
College of Vet. Med., George Washington University.	D.V.S.	
Total		3

Doctor of Veterinary Science—

Colorado State Agricultural College, Vet. Dept.	D.V.S.	
Kansas City Veterinary College.	D.V.S.	
U. S. College of Veterinary Surgeons.	D.V.S.	
Total		3

Scattered—

Chicago Veterinary College, Dr. of Comparative Medicine	M.D.C.	
North Dakota Agricultural College, Vet. Dept.		
No degree decided upon.		
Ontario Veterinary College, Veterinary Surgeon.	V.S.	
University of Toronto, Bachelor of Vet. Science.	B.V.Sc.	
University of Toronto, Doctor of Vet. Science.	D.V.Sc.	
Laval University, Veterinary School, Montreal, médecine vétérinaire	M.V.	
No replies received from four colleges.		4

Total degrees 23

A CRITICAL EXAMINATION OF THE CHARACTER OF OUR DEGREES.

The simple title veterinary surgeon, originally imported from Great Britain, is the equivalent of the *médecine vétérinaire* of France, of the *Thierarzt* (veterinary physician) of Germany, and other veterinary titles of European countries. It means just what it says and is understood by English-speaking people as signifying one who is specially educated to treat the diseases of domestic animals. It is *not intended to be a doctor degree*, but is given to students on graduation as a government license to practice our profession and enjoy therewith the legal rights and protection that go with it.

This title has been criticized as faulty, as it signifies a surgeon only, and because it constitutes a pleonasm in the light of etymology. The term "veterinarian" is certainly more correct if we go back to the original Latin, as is also the *noun* "veterinary," plural, "veterinaries," although many young veterinarians object to the latter nearly as much as to the old English term, horse-doctor. It is useless to fight this term, so deeply rooted in the language of the people, and it would be wiser to make it honorable by a high educational standard and good moral and professional conduct which allow a magnanimous acceptance of popular slang. Mark Twain gives the much abused and often ridiculed horse-doctor a high place in heaven.

Curiously enough, the old V.S. found more advocates at the first meeting of the Veterinary Faculties (1894) than any one had expected. It was hit upon as a wholesome reaction against the burlesque veterinary degrees that had just been invented. One of our veterinary professors put it this way: "Our professional schools and colleges are giving away all sorts of doctor degrees to illiterate men and women, and in consequence this degree has lost with us its original mark of distinction. We have arrived at a point where simplicity of title means more than the bluffness of a degree." This sentiment was applauded at that time.

But the custom of our American veterinary colleges to confer doctor degrees upon graduation, quite naturally imitated from the much older medical schools, had already taken too firm a root to be upset, and there developed the other sentiment to adhere to this custom unless the initiative to change was taken by the medical schools, which was not considered probable. Of the doctor degrees discussed that of doctor of veterinary medicine found the most advocates. It was considered the most correct degree, both from the standpoint of the original Latin use, as also from the adherence to it by European universities. The Latin "*medicina veterinaria*" certainly included *all the branches of our science and practice*. The term has been used in this conception for nearly two thousand years, and we can rest assured that it will be so used for an incalculable time to come. The degree of doctor of veterinary medicine is the only one acceptable as an international degree. It is readily understood by foreigners, while our other degrees (doctor of veterinary surgery, science or comparative medicine) cannot be understood by those who do not know the English language well. We must reckon with this fact, that we are no longer a secluded nation, but that our American veterinarians have established themselves in the Orient, in South America, in Africa, where they mingle with European veterinarians in free competition, and we should label them properly as our foreign missionaries.

It is really immaterial whether this degree is written on our diplomas in Latin or English, but it is expedient and necessary that we employ hereafter only *one* abbreviation for the several in present use. Exactly the same is done by our American doctors of medicine with their two degrees of M.D. and D.M., of which only the first abbreviation has become uniform. They were more fortunate in having only two letters to mix, while our three letters allow a more confusing combination. But this is a comparatively small difficulty to be overcome by agreement, particularly as the degree is otherwise without fault or flaw.

The degree of doctor of veterinary surgery was easily constructed from the old English veterinary surgeon (V.S.), but if analyzed, stands only for one branch of general veterinary medicine, and refers rather to handicraft than to medical knowledge. It is certainly limited in its conception, and is open to criticism as it invites unnecessary argument. It is not understood by foreigners, as the word surgery is a contraction from *Chirurgia*. It certainly cannot be recommended as a uniform degree.

More correct is the degree of doctor of veterinary science. It does include all the branches of veterinary medicine, but it does not properly convey the idea of practice. Etymologically it signifies one who knows rather than one who applies. Science is a high-sounding word with us, but so much abused by unbridled application, that it is easily made ludicrous. The corn-doctor, the rat-catcher and many other small specialists call themselves scientific. Its true interpretation depends upon surroundings. In university circles, in scientific laboratories or similar institutions, a doctor of veterinary science may find his rightful place, but the degree falls quickly to a lower level if seen on the walls of the livery stable office. Of course, the personality of a man and the surroundings he lives in make or unmake any degree, but none other does drop so sharply if seen in a wrong place than the degree of so-called sciences. Moreover, the word science is a corruption from the Latin *scientia*, a stumbling block to foreigners, except the French. It is a nice term, but slippery and not without fault, so that it cannot be recommended for general adoption.

The degree of doctor of comparative medicine is not strictly a veterinary degree. Veterinary medicine is only comparative in so far as it includes the study of the diseases of the various domestic animals and, perhaps, human medicine. Comparative medicine, analogous to comparative anatomy, would include the whole zoological scale of animals from the anthropoid apes down to snakes and mollusks, etc. The average veterinarian could not possibly master the knowledge of the diseases of these myriads of animals, nor would he likely find a place of work, except in

zoological gardens. The degree is out of question as a uniform degree.

If we reflect now on the development of our widely different veterinary degrees, it is quite clear that mistaken rivalry and untamed ideas of progress are largely the cause of their existence. No doubt they were all chosen with the best intent to improve on the preceding degrees, because instinct made the newly born colleges feel that hardly any previous degree was faultless. On the other hand, it is apparent that few of those responsible for the choice of a degree, took the time and trouble to seriously study the question, if they were not actually in want of correct knowledge and foresight. Then, too, material progress, of more importance at that time, overshadowed the seriousness of a proper degree. After nearly half a century, it is now becoming plain, that the matter was left to be corrected by the survivors of that time and the younger generation of veterinarians. Who can deny that this is the characteristic American way of doing things! Push and a certain superficiality go together, and while they have worked wonders in forming rapidly a new country and a new people, and in bringing forth the professions as soon as their need became manifest, after-pains of some sort are liable to occur from overzealous action. In our case, we are now charged to correct the error of confusing the veterinary degrees, perpetrated by our professional predecessors, and if we do it now properly, later generations of American veterinarians will gladly give us credit for better knowledge and greater wisdom.

THE FORM AND THE VALUE OF DEGREES.

The need of a proper *form* of the veterinary degree is confined to a testimony of the special training received by the graduate, and this together with the abbreviation used for the degree, ought to be easily understood alike by the common people, the educated people, the other professions and the authorities of the government, national, state and municipal. Historical precedent of a degree will go a long way in making it plain to all, as tradi-

tion has always been obstinate in preserving the old, and still is so.

The abbreviation of degrees has come into use for the sake of brevity, and as it is much more applicable in the daily routine of life than the degree written in full, it is the more important of the two. In all countries, including our own, where doctor degrees are still written in Latin, the people have substituted for such degrees an equivalent in the spoken language, so that practically a uniformity of degrees does not exist in an international sense. Yet, it must be our aim to make them as nearly so as practicable.

There are two aspects to the *value* of degrees, the ideal and the material. To European veterinarians the ideal side of the question appeals more strongly than it does to us. Pride in the veterinary profession, yet comradeship with all other professions, the wish for cultured society, are well developed among them, and the public acknowledgment of the dignity of veterinary titles and degrees is jealously guarded. It takes time there to earn a degree; it is only gained by much longer study and greater intellectual capacity than we demand. The poorly educated and flat minded cannot attain it. The European veterinarians have a *reason* to be proud of their profession and degree.

Not so with us. We can meet any day dissatisfied veterinarians, who express their sorrow not to have chosen the medical profession, which—as they believe—guarantees a better social standing, offers greater advancement, and a larger income. Some of these malcontents take so little pride in our profession that they do not exactly know their degree or what it means, particularly if it is written in Latin. The value of the degree is small to them, because it was acquired without great effort, and—in some instances—almost given away to them. Yet, if some of the possessors of a doctor degree are asked why they do not prefer the more simple V.S., they will reply, No, there is money in the doctor.

Such sentiment would be absolutely resented by European veterinarians. Yet it is generally true, that with us the doctor degree has a superior material value and an inferior ideal value.

We shall have to count with this sentiment in trying to choose a uniform degree for present needs, but, looking forward, must also try to raise at the same time its moral value in accordance with the higher educational standard of our time; to make it more difficult to obtain, more appreciated when earned, and less of a farce in the judgment of educated people or even in the minds of many recipients. A doctor degree without a correspondingly high school education must and does invite censure or ridicule.

THE CHOICE OF A UNIFORM VETERINARY DEGREE.

After all that has been said above, there should be no great difficulty in arriving at the choice of a degree for our American needs. By elimination of the degrees having no fixed or permanent standard, we have left for a choice the old V.S. and the more modern D.V.M.. The Toronto Veterinary College, improved, has maintained the V.S. as a graduating title, and the signature of the Minister of Agriculture on the diploma will carry the necessary authority with it throughout the Dominion and beyond it. Besides, the University of Toronto holds out the two veterinary degrees of B.V.Sc. and D.V.Sc., to be obtained upon proof of a higher educational standard and prolonged professional study. This is a timely move upon which we can most heartily congratulate our northern colleagues.

We cannot exactly do the like in the United States, limited. The old title V.S. is no longer conferred by any of our veterinary colleges, and we have to persuade over twenty schools to unite in a compromise upon one degree, instead of legislating for one college. To fall back on the V.S. would be too great a reaction after we have allowed the veterinary doctor degrees to permeate the country. We cannot now break with the custom of the American professional colleges, medical, veterinary, dental, etc., to confer doctor degrees on graduation, which is too well established to be upset without revolt.

Thus, if we must have a veterinary doctor degree for our graduates, let us choose the D.V.M. which is correct by prece-

dent and tradition, conferred by the majority of our American colleges and European universities, and understood everywhere. It is not fanciful, not ostentatious, and constitutes altogether the most reasonable and practical degree that can be recommended to those of our colleges that have not already adopted it. The only point to be definitely settled about this degree is its abbreviation. If we take the well-established M.D. as guide, the V.M.D. would perhaps be the best imitation. But as our degrees of doctor of veterinary medicine are now all written in English with the exception of one, the most proper American abbreviation is that of D.V.M. Its acceptance would create little disturbance among the eight colleges conferring this degree, and as soon as the other six colleges, granting various degrees, swing around by accepting it in good grace, a uniform degree and abbreviation are an assured fact.

To help the stragglers along, the Association of Veterinary Faculties and the American Veterinary Medical Association can do much by requesting the Secretary of Agriculture to officially sanction this uniform degree and to raise its value by an increased educational standard. Such move may be rather foreseen by our colleges and is expected by many graduates who would welcome the chance to procure a more suitable degree than the one they possess. Thus the colleges would be compensated for the inconvenience of changing the degree, and many hundreds of graduates would try to secure the new degree which would carry with it the high authority of the Secretary of Agriculture.

AN ADVANCED VETERINARY DEGREE.

Dr. Glover recommends an advanced veterinary degree similar to that of the British F.R.C.V.S. Properly, we cannot accede to this suggestion, because we already confer the highest degree obtainable on graduation, leaving us without a choice for a higher or advanced degree. Let us be careful not to make another blunder. It would be nothing short of a calamity should our

colleges start to grant such degrees as that of doctor of veterinary hygiene on mere post-graduate work. The greatest value of a degree lies in the fact that it represents the *whole* knowledge of one profession. At the present time, or until the question of a graduating degree has been definitely settled beforehand, it would be extremely unwise to add to the confusion of our veterinary degrees.

But the writer wishes to plead here for the acceptance by the foremost of our colleges of the commendable European custom to confer honorary veterinary degrees upon the worthy members of our profession. It has not been done so far. Young as our American veterinary profession is it has already produced a number of men of high purpose and scientific merit, and some of them have been allowed to die without proper recognition from our own ranks. Until now we have followed the Roman proverb, *De mortuis nil nisi bene* (about the dead speak only well), but how much would every one of them have enjoyed our liberal acknowledgment of their good deeds and well-spent lives. If the wish for an advanced veterinary degree is already born and gaining ground among us, let our veterinary faculties join with those of the old world in crowning the worthy lives of our foremost members by a D.V.M., H.C., as none other title or degree could equally well decorate the name of its recipient. So altered, Dr. Glover's suggestion is practical, and is the undoubted sign of a natural process of evolution towards higher aims of our profession.

RECOMMENDATION FOR ACTION.

As the writer cannot be present at the coming meeting of the American Veterinary Association at Toronto, he wishes to contribute his mite to bring the subject of a uniform and more valuable degree a point nearer for action by suggesting the tenor of a resolution to this effect. This can be corrected, altered, enlarged or shortened, as the case may be and as a majority may decide.

Resolution recommended:

WHEREAS it is desirable that the entrance requirements for students of the recognized veterinary schools and colleges should be raised to a more satisfactory and modern height; and

Whereas it is necessary that the degrees conferred by these schools and colleges be made uniform in term and value, therefore, be it

RESOLVED, That this association request the Secretary of Agriculture of the United States, to induce these schools and colleges to require as matriculation for veterinary students the certificate of graduation from a high school or an examination equivalent to fifteen unit credits as specified by the North Central Association of Colleges and Secondary Schools; and be it further

Resolved, That this association request the Secretary of Agriculture to approve the degree of Doctor of Veterinary Medicine (D.V.M.), as the uniform degree of the rightful graduates of these schools and colleges.

Department of State, Washington, March 28, 1911.

The Honorable

The Secretary of Agriculture.

SIR—I have the honor to inform you that the Uruguayan Government wishes to make a four years' contract, at a salary of three hundred dollars, gold, per month, with three professors for the government veterinary schools. Applications should be addressed, as promptly as possible, to the Director of the Veterinary School, Montevideo, Uruguay.

The requirements are described as follows:

"*First.* Surgical pathology, operative medicine clinics. *Second.* Microbiology investigations, production of vaccines and serum. *Third.* Pathological anatomy, histology, embryology."

The above information has also been communicated to the Secretary of the Interior.

I have the honor to be, sir,

Your obedient servant,

(Signed) P. C. KNOX.

AMERICAN VETERINARY HISTORY—ITS MEANING AND ITS SCOPE.

By D. ARTHUR HUGHES, LITT.M., PH.D., D.V.M., CHICAGO, ILL.

"HISTORY IS THE ESSENCE OF INNUMERABLE BIOGRAPHIES."—CARLYLE'S ESSAY ON HISTORY.

Veterinary journalism must take into account all lines of thought which together compose the veterinary intelligence and education of to-day. It is not well, in a periodical aiming to represent the profession of the continent, to cover the pages entirely with ultrascientific articles; nor yet with strictly practical articles only. A veterinary journal in America, to be representative, must be a mosaic—a composite of the profuse intellectuality which belongs to the vitalized, progressive profession found on this continent. Why should we not, therefore, in speaking of the meaning and the scope of American Veterinary History, survey the profession from the point of view of the investigator who seeks to get a masterly knowledge of current events for the purpose of narration?

Not long ago Dr. Liautard, in his monthly "European Chronicles," referred to the printing of a "History of Alfort"—the national veterinary school in the environs of Paris. The name Alfort is written large in French veterinary history. Its teachers, its policies, the doctrines that it has promulgated, the new scientific data that it has accumulated, have been vital in modern France. Its professors have been lights of the first magnitude in European veterinary education. Its policies have been adopted with acclaim in other veterinary institutions. Its

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doctrines have been received with reverence and accepted as from authority. The results from its laboratories have challenged the interest of all scientific bodies in any way working along similar scientific lines. Who has not heard of its masters, such men as Bouley, Nocard, Vallée, Moussu, Cadiot? Who does not know that the history of Alfort is a large chapter in the volume of the history of scientific advancement in France?

In Europe there is reverence for the past. Men remember that the fortunes of the present are the fruition of the past—that present success is a result of previous events due to an earlier history. Hence the publication of the chronicles of Alfort in book form, which was noted in the REVIEW. What has gone on in Alfort is going on in American veterinary colleges—the molding of men; the establishment of worthy educational precedents; the inauguration of policies in national and state associations based upon a vision which discerns better things for the future of the profession than are recognized to-day. The history of an American veterinary college is yet to be written. Nevertheless the facts are accumulating day by day, for events are transpiring which some time will be recorded in favor of a college or colleges, in the manner that the history of Alfort has been written.

Occasionally a speech is made, or an article appears in the veterinary press, which indicate that thinkers are at work on veterinary historical topics.

When Dr. W. Horace Hoskins made a biographical address, about a year ago, before the New York Practitioners' Club, on veterinary leaders in the east, now dead, whom he had known and admired; and when he expanded that address into an oratorical eulogy, under the caption, "A Nation's Loss, A Profession's Tribute to Fallen Leaders," pronounced before the American Veterinary Medical Association in San Francisco last September, he was dealing with all any leader in life "can traverse between hope and despair." He saw, in these biographical studies, bits of the clay out of which the life of man is formed. "But

now, Oh Lord, Thou art our Father: we are the clay and Thou our Potter; and we are the work of Thy hands."

"All that is at all
Lasts ever past recall,
Earth changes, but thy soul and God stand sure;
What entered into thee
That was, is, and shall be:
Time's wheel runs back or stops: Potter and clay endure."

Dr. Hoskins' speech was not essentially mournful, like a resolution of a committee on necrology; rather the purpose was to record in the spirit of eulogy the deeds of great men fallen. They came to life again by the work of his hands—Huidekoper, Pearson, Roscoe R. Bell, Harger, Andrew Smith. Whatever be its virtues, Dr. Hoskins' speech is but a speech. It went a step further than the obituary notices in the newspapers or the reports of necrological committees of associations. Alive with memories of personal friendships, at times it bubbled like champagne. The speech consists of short biographical memorabilia and brings out the influence of noble friendships and leadership in professional advancement.

Dr. Olaf Schwarzkopf is another man who, throughout a busy life, has stored away in his notes numerous facts on American veterinary history, and has cherished the hope of recording them as an encouragement for men to come after men now living. There is no closer student of veterinary tendencies than he. Wherever you find a German scholar—visiting the art treasures of the Sistine Chapel, Rome; in Egypt among the pyramids; in the Amazonian wilds studying insects and birds; in the war camp perspiring with excitement—you will find him taking notes. The Germans are the most laborious note takers in Europe. There is profit in the habit. Dr. Schwarzkopf, in the first installment of his article on the historical aspect of the question of the conferring of veterinary degrees in Europe, is at point. He has there sketched historically the development of European veterinary education as it is illustrated in the attitude of Europeans to veteri-

nary degrees. That article serves a double purpose—it throws into relief the contrast between European methods of conferring veterinary degrees and our own; and it traces the ascent of the veterinarian from his earliest days in Europe of social obscurity and intellectual nothingness to his present happy status as the compeer of men in the other professions.

In my leisure hours, which are not many, I have written biographical articles on leading veterinarians or teachers in veterinary schools, and published them in certain eastern magazines and newspapers. About four years ago, for instance, by request of the editors of the Cornell University *Alumni News*, I wrote biographical sketches of the services to their country and the profession, of Drs. Salmon, Pearson, Farrington and Moore. At present I am engaged, by agreement with the editors of a famous London veterinary periodical, in writing of the achievements of other prominent veterinarians in America, who have done much for the making of American veterinary progress. A short time ago Henry Holt & Company, of New York, published a book entitled, I think, "The Makers of Modern Biology." Dr. Mark Francis, of College Station, Texas, the investigator of immunization against Texas fever, has suggested to me that a similar book, entitled, "The Makers of Modern Veterinary Science," also should be written. Written it will be by some one some day. The work deserves doing. It is easy to lay hold of established facts and apply them practically. But who were the men who turned theory into fact. Who were the men who established the great veterinary truths; who discovered them; who were the men who, through sacrifice, made us the gainers? Infection, immunity, sera, these are easy words to understand to-day; but who established the facts about them in veterinary science? Who were the pioneers who started the colleges? Who pointed the ways for veterinary progress? Who quickened the veterinary conscience in the press and rebuked humbug in veterinary practice? Who were the men, strong in administrative gifts, who made the way for the upbuilding of a national system of control of animal disease? These, whoever they were, were some of the

makers of veterinary science, were some of the makers of American veterinary history.

Among those who have contributed much to the making of veterinary progress, and in the making of American veterinary history, are the leaders, past and present, who are, or have been, presidents of the American Veterinary Medical Association. In the speeches of the presidents, year by year, direction has been given to lines of thought which meant progress. These are the men intimately acquainted with the flow of current veterinary events. Their speeches—those of Law, Dalrymple, Rutherford, Melvin—are indices to the veterinary history of the day. If a man made a digest of these speeches he would have many a cue for a study of the history of our chosen profession. The leaders sense the directions in which progress can best be made. Taken together, and examined from the historical viewpoint, the speeches exemplify the value of such a study, and the encouragement to our membership which such a study of veterinary history would give.

These thoughts, on the value of veterinary archives, lead me into a discussion of "American Veterinary History—Its Meaning and Its Scope."

Great events in political history have this as a prime characteristic—that their impact upon the times is such that they change the current of subsequent events. Great gatherings of men are among the events which have strong impress and effectiveness on the events to follow. In modern European history the daring of Martin Luther at that astonishing ecclesiastical gathering, the Diet of Worms, strengthened the Reformation movement and gave it impetus. In early American political history the Declaration, in the City of Philadelphia, of the Independence of the American Colonies, steeled the hearts of all men, from Massachusetts to Virginia. The gatherings of to-day have their effectiveness on the events of to-morrow. In the scientific world, the declaration of Koch at the International Congress on Tuberculosis in London, in 1901, denying the intertransmissibility of bovine and human tuberculosis, kindled anew the spirit of investigation amongst us on this almost thread-bare theme.

Well did the Congress on Tuberculosis, held in Washington in 1908, leave its impression on events veterinary in America from that time until the present.

Similarly, the assemblages of veterinarians, when they meet in national convention, aye, in international convention, as in the last International Veterinary Congress at The Hague, a year ago, are bound to direct the currents of veterinary events. When we met in national convention in historic Philadelphia, in 1908, the occasion was peculiarly felicitous to remind us of the influences borne by the past upon the present. In 1909, in Chicago; in 1910, in San Francisco; as shown by an examination of the Proceedings of the American Veterinary Medical Association, for the two years, both of which have been published; American veterinary history was in the making. Such gatherings pre-eminently dispose the hearts of men to better purposes, and awaken God-given enthusiasm for vaster issues in the veterinary progress of to-morrow.

I.—THE MAKING OF AMERICAN VETERINARY HISTORY—WHAT AMERICAN VETERINARY HISTORY IS, AND HOW IT IS BEING MADE.

You ask me, what American veterinary history is and how it is being made.

The subject, the writing of anything on American veterinary history is a virgin one. Though American veterinarians have written much, and done much, to forward events for the advancement of the profession, no narrative of the salient events since the profession, as a profession, first came into existence here, has ever been written. We have been barren in the writing of biography or autobiography. The lives of many learned American physicians have been written. I do not know of a single well-executed biography on any American veterinarian. We have been barren in the narration of the course events have taken which have carried forward to success great movements for our good.

The function of the American veterinary historian is not to relate meaningless and inconsequential facts about ordinary

experiences in this workaday world; nor, Boswell-like, to set down idle talk of idle individuals which has had no effect on veterinary progress, nor has lent any color to events. Ordinary and commonplace events in veterinary experience indicate nothing of what progress will be made. American veterinary history is the narrative of the course important events have taken in all things concerning the veterinary profession, since that branch of learning was introduced into America, which has made for the enlargement of the interests of the profession, to increase the bounds of its usefulness, and to give it place and power among the learned professions.

The narration may take many forms, phases, chapters. It may, in part or whole, be a narrative of the events in veterinary sanitary progress, national or state, from the beginning. It may be a narrative of the chief advances in all forms of investigation in veterinary sciences and the effects on veterinary progress. It may be an account of the progress in practical work, from the days of cow-leeches and the days when charlatanism reigned supreme everywhere, to the present. Our American veterinary progress has had many hues and shades. Just as American political history has had many epochs, many aspects, so our veterinary history has had many phases, many sides. Whether the important facts be related in one or all, each or all constitute American veterinary history.

American veterinary history has been made in the events which transpired since the beginning. Truthfully, that history includes everything good or bad done in a professional way by veterinarians—as citizens of specialized knowledge working in society. Hence it has its varying chapters. These chapters together constitute the range of our professional history.

II.—THE MAKERS OF AMERICAN VETERINARY HISTORY—THE PERSONS AND EVENTS WHICH ARE THE ESSENTIAL FACTORS OF AMERICAN VETERINARY HISTORY.

Though Thomas Carlyle is not counted an historian at all by historical scholars of our day, because his work is rather the

product of a perverted imagination than that of an adherent to facts, his acumen and his intuition make him utter sayings about history in general which are close to the truth. He did so when he wrote: "History is the essence of innumerable biographies." For history, in any form, is taken up with men and events in their lives. The stream of events, which compose the material of historical narration, is often enough directed in its course by movements, and these are begotten by, encouraged and made purposeful, by leaders of men. The meaning of the word movement, when applied to the turns events take in American veterinary history, is no different from the meaning of the word in political history, except that movements which are set up in veterinary affairs are for scientific ends; their purpose is for some form of professional betterment. The great movements for veterinary sanitary improvement; for pure food laws; for meat or milk hygiene, all are examples of movements for good in recent veterinary history.

The effects, in the formation of events in our professional history, are produced by leaders of every sort. They sense the tendencies of the age in our science. They intellectually discern the desires of the masses of men. They know the direction the currents of events should go. They make them go in that channel which will be for the greatest good of the greatest number. They are utilitarians. But they are utilitarians in veterinary matters because they clearly see what would make for scientific progress and what would not.

III.—THE MATERIALS OF AMERICAN VETERINARY HISTORY—THE RECORDS, DOCUMENTS AND OTHER SOURCES OF INFORMATION ON AMERICAN VETERINARY HISTORY.

Commonly the acts of men, particularly of leaders of men, and events in their lives, are made a matter of record. What are the recorded acts which will go to make the material for the historian of the American veterinary profession? The evidence, which constitutes the materials out of which our history is to be written, is almost bewildering in its variety. Yet all evidence

must be consulted, and the judgment of the writer exercised upon the trustworthiness of the materials.

Of such material is the profusion of national veterinary literature—all that has come from the government printing office touching veterinary science—annual reports, special reports, bulletins, circulars, tables of figures on animal industry, maps, leaflets, even the orders of administrative officers. Any or all of this, part of which to some may appear trifles, may be valuable data for the historian of veterinary progress in this land. Again the veterinary literature of all sorts issued by the states—the laws, regulations and ordinances, the manifestos and decrees, are of the greatest worth to indicate to the veterinary historian the way events are going, or rather have gone, in the different sections of the country.

Furthermore, the records of veterinarians as leaders in all the more unofficial walks of life—veterinary materials of all forms issued from the press; our scientific periodicals, whether the magazine still is being issued or is defunct; sporadic essays appearing in popular magazines, or the daily press, or in the scientific press other than our own; the publications of all sorts of the American Veterinary Medical Association, or the United States Veterinary Medical Association, even the unpublished records of the veterinary associations, national, state, or local—all these are indices to the historian of veterinary advancement. The veterinary publications of all sorts and classes, whatever leaves the printing press in any way concerned with our work, as well as all unpublished records, constitute our veterinary archives. They should all be guarded and preserved as memorials of a revered past.

Moreover, biography, autobiography and letters, journals and records of personal work of every kind, which is of the best professional service, are priceless materials for the historian who is to work upon them when the maker of personal record is gone. Such personalia as painted portraits, busts, photographs, photogravures, electrotypes, which are the artistic expression of personal appearance, have an increasing value to the historian

as time goes on. Opinions of men of the day on professional labors of their fellows, after the historical writer has made the necessary discount for underestimation or overestimation, and has discovered the truth from the sorting of evidence, constitute valuable historical material. In veterinary history, as in political history, florid eulogies of men, or acrimonious satires, have a place among an historian's materials. The opinions of men of the day on veterinary happenings explain much to the historian. All printed or unprinted records of the lives of veterinarians, particularly leaders of thought and action, the spirits which stand out like cathedrals amongst us, constitute the materials of American veterinary history.

If it is urged that all I have just said is worse than vain, the answer is, that the canons of historical scholarship of our day require the writer to learn the truth for his narrative and to consult every bit of evidence in the known records of the lives of men, to sift and weigh the evidence, and relate the truth as it is found. You may read a chapter in any great political historical work of our times, such as Mommsen's "History of Rome," or Von Ranke's "History of England in the Seventeenth Century," or Von Holst's "Financial History of the United States," and there see how strictly adhered to are the canons of historical scholarship.

I dwell upon this point because it bears a moral for us all, which is that we should carefully preserve our veterinary archives; we should jealously guard all these memorials of the past that I have mentioned. Show me a man that does not reverence the doings of his forebears, or who is not proud of what has been accomplished in the old time before him, and I will brand him as a man who is himself probably of little worth. Show me a veterinarian who is not jealous of the accomplishments of his advancing profession, and does not understand that the records of those accomplishments should be enthusiastically and religiously preserved, and I will mark him at once as a man of little worth himself.

IV.—THE VETERINARY MEDICAL HISTORIOGRAPHY—WHO SHALL WRITE AMERICAN VETERINARY HISTORY AND HOW SHALL IT BE DONE?

We hear much of the history being written of a political period, of a revolution and its aftermath, of the reign of a sovereign, of the events happening during the presidency of one of our chief executives. Who has yet ventured to write the history of American medicine, still less of American veterinary medicine? We may well ask, who shall write American veterinary history? Not a man, surely, who will jabber simply-mindedly on common events. But he who can range over the lapse of years covered by American veterinary medicine since its beginnings; who has been a researcher into the full records of the advancing science; and who, with dignity and scholarship, ventures to write a narrative of the progress made under the converging light of many minds.

How shall it be done? After a complete search among the vast records; with an eye to the truth, and a ravishing desire to truthfully and glowingly relate the advances made. He who would write American veterinary history must have acumen, to know the worthy things thought and done; must have literary sensibility, to properly narrate the events in their onward course; must have incision, to know the essential factors which have made progress and continue it.

V.—AMERICAN VETERINARY HISTORY OF YESTERDAY, TO-DAY AND TO-MORROW.

Though we cannot, in this article, enter upon a discussion of veterinary history, in its few interesting epochs, with any particularity, we may indicate, in some of its broader outlines, remarkable events in the American veterinary history of yesterday; survey a few conditions to-day, and indulge in hopes for to-morrow.

Some of the main events in our professional history have been associated with the many important discoveries in our

science since comparative medicine began to be studied and practiced amongst us. They are connected with the progress made on the American continent in the principles and application of the principles of sanitary science to conditions here. These events, too, have followed the repression of charlatanism in veterinary practice and the substitution of veterinary knowledge. They have consisted in laying the solid foundation of sound veterinary education. The main events in our past have been revolutionizing in that everywhere we have endeavored to prepare the way for the utilization of veterinary science for the common good.

He who writes the American veterinary history of to-day will have to speak of the sparseness of veterinarians amongst the eighty millions of our people and the reasons for it. He will speak of the limited and unextensive veterinary organizations; of the lacking sense of what national calamities animal infections are; of the backwardness of education; of the fewness of the discoveries in the science and the inconsequentiality of many investigations. On the other hand he must write of the zeal and the ideals of the veterinary leaders. He must speak of the expansion of knowledge of comparative medicine; of the bettering of the rank and file of the profession; of the recognition, everywhere, of the unsatisfactory conditions in the profession; which is indeed, an encouraging sign of immediate professional betterment. For discontent leads to reflection, when the burning fires of ambition urge men to the assertion of will, and change for the better follows.

He who writes the veterinary history of to-morrow we hope will have to commend the systematization and unification of the work of the schools. He will surely record our professional equality with Europe; except that the profession here is set to American standards, and the work has a suitability to American conditions. We hope he will be able to speak of the zeal of our investigators; our sanitarians; our publicists; of our admirable military veterinary corps; of our complete national, state and municipal food hygiene. It is true that the work of the his-

torian, the historian of American veterinary medicine as well, has nothing to do with the present or the future, only with the past. His narrative is concerned only with what has been done, not with what is being done, nor what will be done or is planned for to-morrow. Nevertheless, men fain would indulge in the pleasures of hope, believing that coming events cast their shadows before.

What has been accomplished speaks for itself. No garnishment of the imagination is needed to bear it into our minds. Precisely the same is true of events set into an historical narrative of any sort. He who purposes to write the history of comparative medicine in America must record the facts and allow the truth spoken, and the work done, to be its own reward.

For the narrative of our professional history, or any part of it, should conform to the standard for all good historical writing voiced by a warm personal friend of mine, a first-honor man of the Modern History School of Oxford University, now Professor in the University of California, when he says, "The aim of the historian is to discover the truth with regard to the past, as far as his limitations allow; and having so far discovered it to narrate the truth without obtruding his own personality or his own ideas more than his weak humanity makes inevitable. It is a hard enough and a difficult enough task that the modern historian sets before himself. Truth is a very unapproachable mistress. The harder the labor of approach, the further off she goes, and however laborious and careful the steps that may be taken, the more distant seems her icy throne. It is disheartening and heart-breaking to the historical student to know how little the most accomplished and most hard-working historian can do towards building a palace in which Truth may live. * * * The work of the historical student must be its own reward."

DR. JOHN W. ADAMS, Philadelphia, sailed for Europe March 31, where he will visit a number of veterinary schools during the summer.

SERO DIAGNOSIS OF GLANDERS.*

BY DR. K. F. MEYER, ASSISTANT PROFESSOR OF PATHOLOGY AND BACTERIOLOGY,
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PART I.

An accurate method of diagnosing glanders is a most important factor in controlling this disease; yet, not all the usual methods have proved to be always reliable. If we depend only on objective symptoms, we will in the majority of cases be unable to determine the character of the disease, and will overlook many horses which are affected with the chronic, occult type of the disease, and which to a greater extent than all others, act as distributing agents for new outbreaks of glanders. Therefore, it has long been the aim of all investigators who have had to deal with glanders, to find a way of early recognizing the glandered animal, so that proper protective action can be taken at once. Only within the last two years have apparently reliable methods of diagnose been perfected, and it is not only our hope, but our belief, that the methods that I shall now describe will prove both efficacious and practicable.

The first step toward finding a diagnostic method for the detection of glanders was made in 1890, when Hellmann applied the mallein test. The subcutaneous injection of mallein, which was at first generally considered to be the best diagnostic method for glanders, has gradually lost its reputation, and I myself have come to realize that practicing veterinarians cannot depend on this method. Through reliance upon it many false diagnoses have been made, and had mallein proved efficient we would not

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now find glanders so prevalent in all countries of the world. Practically all the preparations—mallein brute, mallein dry (Foth) and others—give so many and varying results that, from my own experience, I came to the same conclusions as all other investigators of this subject, namely, that the mallein test is not a reliable and conclusive method of diagnosing glanders.

On the other hand, I admit that under certain special conditions it may be valuable as a diagnostic agent, especially when used in form of the ophthalmo and cutano-reaction as described by Schnuerer¹. Nevertheless, even with these methods it has frequently happened that from the reaction obtained the presence of glanders has been denied, and if other modern methods had not demonstrated the presence of glanders, diseased animals would have been released from quarantine, and new sources of infection have resulted.

A new method of diagnosing glanders was introduced into veterinary science when Macfadyean² proved that the serum of a glandered horse contains agglutinins. The methods I have in mind originated from this observation and are all classified under the term sero-diagnostic or immuno-diagnostic methods of determining glanders; they have been introduced only recently into the laboratory of veterinary bacteriology. These are tests of an intricate nature and therefore require the most accurate technique and can be carried out only in a laboratory. The practitioner is relieved of the arduous work of observing temperatures, etc.; he has only to bring to the laboratory a small amount of sterile serum collected from the suspected animal. All else is done in the laboratory, and the practitioner will be informed in twenty-four to forty-eight hours of a definite diagnosis. The serum should be collected as follows:

Draw from the jugular vein from twenty to thirty cubic centimeters of blood into a sterile test tube, which can be obtained from the laboratory. Let the blood coagulate and with a pipette collect the serum which has been pressed out of the coagulum. Place the serum in a sterile bottle and send by express to the

laboratory. To preserve the serum an addition of five-tenths per cent. of carbolic acid is advisable.

This serum has been employed by the scientific world for the past two years for the following tests, which I had modified somewhat so as to adopt them to conditions peculiar to tropical countries. These tests are:

1. Agglutination test.
2. Deviation of complement test.
3. Precipitation test.
4. Sero-anaphylactic test.

Our attention will be directed only to the most important one, namely, the deviation of complement. The other methods have not proved to be so conclusive and reliable. In a later paper I will discuss in detail the agglutination test and its correlation to the new test referred to. The sero-anaphylactic test was used by Schern³, Miessner⁴, Wladimorff⁵ and myself on several hundred samples of sera with varying results. Till now I have published nothing on this subject, but from recent literature I am informed that my observations were entirely correct and correspond closely with the results obtained by Wladimorff. I hope to discuss the details in a special paper.

The precipitation test has been used by Wladimorff,⁶ Bonome,⁷ Mueller,⁸ Pfeiler,⁹ Schnuerer,¹⁰ Miessner,¹¹ Mohler¹² and others with fairly good results. The experiments conducted by Mohler follow more or less closely the method described by Konew. In my publication in the "Annual Report of the Department of Agriculture, Transvaal, 1910," I referred to the results I obtained following the methods of Pfeiler, and expressed the hope that the precipitation test may in time be valuable for diagnosing glanders at an early date when no clinical symptoms are present, because the animal is in a stage of incubation. The results with this test, which is the simplest one for the practitioner, are very encouraging, but still are in such an experimental stage that I do not dare to recommend the test, and have therefore to refer the reader to the literature on this subject.

The principle of the test which I shall discuss in detail in this paper, the deviation of complement, is so closely related to

our knowledge of immunity and immunity reactions, that I cannot exclude elementary theoretical explanations. Inasmuch as this reaction has been mentioned in connection with the diagnosis of syphilis, contagious abortion, etc., interest in the mechanism of this reaction is probably very great.

If we inoculate into the body of a rabbit small and increasing doses of red blood corpuscles of the sheep, at intervals of seven days, the rabbit will develop in its serum substances which have the property of dissolving the blood corpuscles of sheep. The substances formed are anti-bodies or immune bodies, which because they dissolve the blood corpuscles are hæmolysins. The red blood corpuscles inoculated are called the antigen on account of their property of producing in the animal body anti-bodies. Not only blood corpuscles but also bacteria, albuminoids and toxins can produce anti-bodies and, therefore, all are antigens. The dissolution of red blood corpuscles which takes place when serum of these rabbits is added to the red blood corpuscles of a sheep is called hæmolysis, and is microscopically easily observed in the test tubes used for this experiment. The opaque blood bulk becomes transparent and lacky, the hæmoglobin escapes from the erythrocytes into the surrounding fluid (serum plus physiological water) and stains it red.

If we take serum from a rabbit which has been treated with sheep blood in the way indicated, and expose it for half an hour to a temperature of 56 degrees to 58 degrees C., we will see that no hæmolysis takes place when this serum is added to sheep blood corpuscles. The hæmolytic action will be restored, however, when we add to this test tube a few drops of fresh serum of an untreated rabbit, or better, of a guinea pig. If this new mixture is incubated at 37 degrees C. we find that no hæmolysis takes place after two hours. We have to conclude from this result, which has been corroborated by very interesting experiments which have been carried on during the past fifteen years in the best known laboratories of serology, that two substances are present in the hæmolytic serum; one, which is not destroyed by 56 degrees C. and is therefore

called the thermo-stabile component, and one which is always destroyed, but, on the other hand, is always present in every normal serum, namely, the so-called complement. This complement, because it is easily destroyed, is called the molabile. An immune serum which has lost its complement is an inactivated serum.

The complement, probably a ferment, activates the hæmoly-sins, which are also generally called the hæmolytic amboceptors, and only in its presence do the blood corpuscles become dissolved. Graphically, we can demonstrate this by showing that the hæmolytic action depends upon three elements, namely, the red blood corpuscles, the complement and the hæmolysin. The hæmolysin has two sidechains, one of which has a close relation to the red blood corpuscles, and the other a connection to the complement. Only when all three substances are present in the test tube will hæmolysis take place. The connection of the amboceptor with the red blood corpuscles is a very close one. The complement, however, is but loosely attached and acts only indirectly. These three substances—complement, hæmolytic amboceptor and red blood corpuscles—together form a theoretical system, and we use the term hæmolytic system to indicate the close relationship of these three elements to the action of hæmolysis.

The complement is present in small amount in all fresh sera of all animals. At room temperature it loses its action, and at a temperature below zero C. ("Frigo" apparatus) it may be retained in the serum for a certain time (four to ten days).

The hæmolysins are specific. For example, immune serum prepared in a rabbit for bovine blood will not dissolve canine or equine blood. However, it has been found that the normal serum of several animals, when used in large quantities, will dissolve the red blood corpuscles of certain other animals. For example, hog serum dissolves human blood under certain conditions. As this normal hæmolysins would interfere with the reaction, we always use a serum against the blood corpuscles which has none of these bodies present. We select a serum which con-

tains the specific antibodies in large quantities, which means a serum of high standard.

Before we can use our serum we have to find the limits of its binding properties to the red blood corpuscles. Unless we first do this, we will obtain a false standard and will form a false estimate of its solving properties, should we follow the table shown below:

Antigen.	Hæmolytic Serum of Rabbit.	Result After 2 Hours.
1 c.cm. 5% sol. of sheep blood	1 c.cm. of active serum 1.10	Hæmolysis.
1 c.cm. 5% sol. of sheep blood	1 c.cm. of active serum 1.20	Partial hæmolysis.
1 c.cm. 5% sol. of sheep blood	1 c.cm. of active serum 1.50	Partial hæmolysis.
1 c.cm. 5% sol. of sheep blood	1 c.cm. of active serum 1.100	No hæmolysis.

We are diluting the complement in the same way as we dilute the hæmolysins, and soon we will reach the stage where nothing of this substance is available to anchor itself to the amboceptor and therefore no hæmolysis will occur. We therefore test our serum by using a constant quantity of complement and decreasing doses of the amboceptor in the way indicated in the following table:

STANDARDIZATION OF HÆMOLYTIC SERUM.

	Antigen.	Amboceptor.	Complement.	Saline Solution.	Result After 2 Hours.
1	1 c.cm. 5% sol. of sheep's blood..	1 c.cm. diluted A 1.10	1 c.cm. diluted C 1.10	2 c.cm.	Complete. Hæmolysis.
2	"	" " 1.100	" "	"	"
3	"	" " 1.250	" "	"	"
4	"	" " 1.500	" "	"	"
5	"	" " 1.750	" "	"	"
6	"	" " 1.1000	" "	"	"
7	"	" " 1.1500	" "	"	Incomplete. Hæmolysis.
8	"	" " 1.2000	" "	"	0
Control 1	"	" " 1.10	" "	3 c.cm.	0
Control 2	"	.....	1 c.cm. diluted C. 1.10	3 "	0
Control 3	"	.....	.....	4 "	0

We judge the reaction as follows: If no hæmolysis takes place the red blood corpuscles are deposited as a red cap at the bottom of the tubes. Just the contrary takes place when complete hæmolysis is present—all the red blood corpuscles have dis-

appeared, and the fluid in the test tube resembles diluted red wine. Naturally, intermediate stages may be present and we then distinguish half, complete or nearly complete hæmolysis, etc. The result is generally judged during the first two hours after the substances have been mixed.

For every correct test it is also necessary to find the quantity of the complement in the serum of the guinea pig, which is the animal we generally use. It was Schubert¹³ who pointed out that the smallest complete solving quantity of complement necessary to dissolve the quantity of the red blood corpuscles with the standard solution of hæmolysin should be used. The long explanations of Schütz and Schubert¹⁴ as to why this should be done, especially in glanders, have no importance, as every one familiar with the complement deviation test knows that we must test every component part of the fluid we use for deviation. The standard of the complement in the serum of a guinea pig is generally obtained in the way indicated by the following table:

STANDARDIZATION OF COMPLEMENT.

	Antigen.	Amboceptor.	Complement.	Saline Solution.	Result After 2 Hours.
1	1 c.cm. 5% sheep blood.	1 cc., Hæmolysin Dil. A 1:1000	1 c.cm. 1:10 (0.1)	2.0 c.cm.	Complete Hæmolysis.
2	"	"	0.5 c.cm. 1:10 (0.08)	2.2	"
3	"	"	0.6 " 1:10 (0.06)	2.4	"
4	"	"	0.5 " 1:10 (0.05)	2.5	"
5	"	"	0.4 " 1:10 (0.04)	2.6	"
6	"	"	0.3 " 1:10 (0.03)	2.7	"
7	"	"	0.2 " 1:10 (0.02)	2.8	Incomplete.
8	"	"	1.0 " 1:100 (0.01)	2.0	0
9	"	"	.....	3.0	0
10	"	.....	1c.cm. 1:10 (0.1)	3.0	0
11	"	.....	.....	4.0	0

This table shows that 0.03 complement is necessary to dissolve the red blood corpuscles. It is therefore advisable to dilute the guinea pig serum to such an extent that just one cubic centimeter of the dilution contains 0.03 serum of a guinea pig (97-degree c.cm. saline solution, 3.0 c.cm. guinea pig serum) and add one cubic centimeter to the test tube for the hæmolytic reaction.

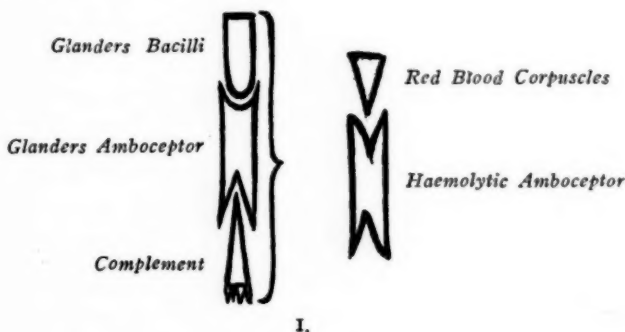
The hæmolytic system is only one part of the entire complex of the complement deviation test; the rather weak connection be-

tween complement and amboceptor can be demonstrated in a mixture of certain immune bodies, in which the complement will, under certain conditions, be removed from the hæmolytic system and become connected with another amboceptor and its antigen.

The second part of the deviation test has to do with two factors; in the disease under consideration, the anti-bacterial amboceptor of glanders and the glanders bacillus. A horse which has become infected with glanders, develops while the specific bacilli are multiplying in its body an anti-bacterial immunity, with the formation in its serum of antibodies. As explained before, every bacteria may act as an antigen. These anti-bodies (cytolytic and lytic) produced in the serum of the horse affected with glanders are specific, and have a great avidity to connect themselves with their antigen—the glanders bacilli—when brought in contact with them in the test tube. We know from experiments carried out by Ehrlich, Morgenroth, Bordet, Gengou and others, that when the homologous immune serum is mixed with the bacteria in the presence of the complement a very stable connection of the amboceptor with the antigen takes place. This reaction, however, is not visible in the test tube, and we use therefore the method of Bordet and Gengou, in adding the hæmolytic system to the mixture of antigen, bacteriolytic amboceptor and complement. By this method it was shown that when the real immune bodies are present, the antigen connects itself to its bacteriolytic amboceptor, and the complement attaches itself to this amboceptor. Nothing of the complement is left over, and the system—hæmolytic amboceptor plus red blood corpuscles—is incomplete and no hæmolysis occurs. The method of Borget and Gengou when first carried out had quite a different object, namely, to show that the complements in the serum of different animals are identical; but more recently the test has been employed to demonstrate the action of the amboceptors. If, however, no specific immune serum be used, the experiment will show fully hæmolysis, a proof that the antigen does not find its specific amboceptor and therefore does not use the comple-

ment, which is free and anchors itself to the hæmolytic amboceptor, dissolving the red blood corpuscles.

This fact, that by the method of deviation of complement in such sera as are not acting bacteriolitically, specific amboceptors can be demonstrated, gives the reaction at once a diagnostic importance. We are able by means of this genial combination and fine technique to demonstrate specific antibodies in the serum of sick animals and human beings. The method was used to find antibodies in man suffering from syphilis, tuberculosis, typhoid, plague or any other kind of bacterial infection. In veterinary medicine Dedjulin¹⁵ carried out some experiments on hog cholera and swine plague with the complement deviation test; Bach¹⁶ applied the test for tuberculosis; McFadyean¹⁷ for contagious abortion; Lichtenfeld¹⁸ for horse sickness and East Coast fever (I may mention here that the results do not correspond with mine, which were carried out before Lichtenfeld started his experiments and proved to be so varying that a continuation seemed to be inadvisable); by the writer¹⁹ for a specific nephritis in equines, and so on. The reaction is so strictly specific that no other substances will anchor itself to the amboceptor than just the antigen producing them. The following drawings explain the reaction graphically:

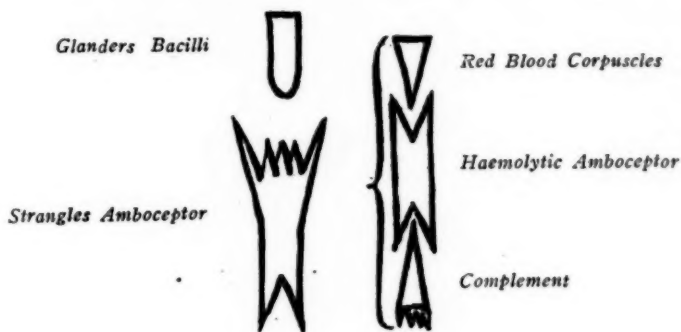


I.

Glanders Bacilli (1. Antigen).
Inactive Glanders Horse Serum (Glanders Amboceptor).
Complement.

Hæmolysin (Hæmolytic Amboceptor).
Sheep Blood Corpuscles (2. Antigen).

Result—The complement became fixed to the complex; Glanders Bacillus, Glanders Amboceptor; no Hæmolysis.



II.

Glanders Bacilli (1. Antigen).

Inactive Serum of Horse (Strangles Amboceptor) Suffering from Strangles.

Complement.

Hæmolytic.

Sheep Blood Corpuscles (2. Antigen).

Result—The complement became fixed to the Hæmolytic and the red blood corpuscles; Hæmolytic.

If a horse is suffering from glanders its serum contains a bacteriolytic amboceptor for the glanders bacillus. The complement will at once connect itself with the amboceptor in the horse serum and is therefore not free, and when new hæmolytic serum and blood corpuscles are added, no hæmolytic of the latter takes place. The complement is bound, or it has been, perhaps, better to say, deviated from the hæmolytic system.

A horse suffering from strangles and not from glanders has no specific antibodies in its serum, and the action of the complement on the glanders bacillus will not take place. It remains, therefore, free, and will attach itself to the hæmolytic amboceptor which is anchored with the red blood corpuscles, and hæmolytic takes place at once.

All these facts were well known from experiments with other diseases when, in the year 1908, Schutz and Schubert²⁰ in Berlin published an article in which they showed that the deviation of complement can be applied for the eradication of glanders. Their experiments were carried out in the same laboratories where, for the first time (1904), the agglutination test was made, tested and found to be a great help in the diagnosis of glanders.

At the same place it was proven that the agglutination test is not absolutely reliable, and that, therefore, an additional test was needed to diagnose glanders in horses, especially as the agglutination test is also often difficult to interpret. To find a more reliable method, Schutz studied the complement deviation, and showed that by this test it is really possible to detect glanders in any horse affected, if the disease is not of too long standing. He studied the test on a large number of animals and finally declared the test to be still in an experimental stage. From experiments conducted in South Africa and in America I am prepared to certify as to the value of the test. The great number of publications which have been issued on this subject during the last two years, all emphasize the splendid results obtained with the new test.

Schutz and Schubert²¹ tested over 3,000 animals and declared that by the complement deviation test practically 100 per cent. of the cases affected with chronic glanders were detected easily and quickly, including those cases in which difficulty usually arose when the agglutination test was used.

Keyser²² in two publications declares that the complement deviation test is more sensitive than the agglutination test. He obtained in six cases positive results where microscopically (by means of animal inoculation) the glanders bacillus was demonstrated.

Valenti²³ declares the Bordet-Gengou method to be of great value for the diagnosis of glanders. He experimentally produced glanders in guinea pigs and tested their serum; also two horses suffering from glanders gave positive results.

DeHaan²⁴ obtained better results with the complement deviation than with mallein. Pfeiler²⁵ had also very good results, especially when used in connection with the precipitation and agglutination tests.

Miessner and Trapp²⁶ by thorough investigation completed the work of Schutz and Schubert, and declared that the complement deviation test in connection with the agglutination test will

give the best results in diagnosing glanders. Shirrow²⁷ in Russia declares the reaction to be very satisfactory.

DeBlicke²⁸ declares the complement test to be reliable as a specific reaction for glanders. Schnuerer²⁹ points out the importance of the reaction, but warns the investigators that they must not rely upon only one test, because during the time of incubation no reaction will be present.

Nevermann³⁰ was able to show statistically that in many instances 100 per cent. of the glanders cases can be detected where the agglutination proves to be negative. From his publications the deduction can be made that the complement deviation test is more valuable and conclusive than the agglutination test. An exception has to be made, namely, in cases of acute glanders in which the agglutination test proved that glanders is really present and when the complement deviation is still negative. This point will be treated by me in a special publication dealing with experiments and observations, which I made on six mules, where the day of incubation was known and the necessary daily blood examinations were carried out. I am able to show that Nevermann's criticism is correct, because in four cases amboceptors could only be demonstrated ten to twelve days after infection, when the agglutination gave a standard of 1:1000 or 1:2000.

1. Schnuerer, T. Allergie bei Rotz, *Zitschrift f. Infectionsk. d. Haustiere*, Bd. 4, Heft, 3-4, 1908.

2. Macfadyean. Preliminary notes on sero-diagnosis of glanders. *Journal of Comparative Pathology and Therapy*, Bd. 9, 1896.

3. Schern. Experimentelle Beiträge zur praktischen Verwertbarkeit der Anaphylaxie; *Archiv f. wissensch. und pract. Tierheilkunde*, Bd. 36, 1910, Supplementband, p. 603.

4. Miessner, H. Die Verwendung der Ueberempfindlichkeit zur Diagnose des Rotzes. *Centralblatt f. Bacteriologie*, etc. Abt. I., Originale Bd., 56. Heft 5-6, 1910, p. 537.

5. Wladimorff, A. Die Malleusdiagnose mit Hilfe der neuen Immunitäts reactionen Handbuch der Technik und Methodik der Immunitätsforschung, Erster Ergänzungsband, 1911, pp. 433-434.

6. Wladimorff. Immunität bei Rotz, Kolle u. Wassermann, Handbuch d. pathog. Microorganism, Bd. 4, Teil 2, pp. 1020-1060.

7. Bonome Ueber die Schwankungen des Agglutinin u. Präcipitin gehaltes während der Rotzinfektion. *Zentralblatt f. Bacteriologie*. Abt. I., Orig. Bd. 38, 1905, pp. 601 and 732.

8. Mueller, M. Die Verwertbarkeit der Präcipitinreaction zur Rotzdiagnose und die Beziehungen der Rotzpräcipitine zu den Rotzagglutininen. *Zeitschrift Immunitätsforschung*, Bd. 3, Heft 4, 1909, p. 401.
9. Pfeiler, W. Die Ermittlung der Rotzkrankheit durch die Präcipitationsmethode. *Archiv f. wiss. und prakt. Tierheilkunde*, Bd. 35, Heft 4-5, 1909, pp. 323-337.
10. Schnuerer, T. Die Verwertung der biologischen Reactionen bei der Diagnose des Occulten Rotzes. *Zeitschrift f. Infektionskr. d. Haustiere*, Bd. 1, Heft, 1905, p. 53.
11. Miessner, A. Die Verwendung der Präcipitation in Form der Schichtungs- methode zur Diagnostik der Rotzkrankheit. *Zentralblatt f. Bacteriologie*, etc., Abt. I, Orig. Bd. 51, Heft 2, 1909, p. 185.
12. Mohler, J. R. The diagnosis of Glanders by the Precipitation Reaction of KONEW. *AMERICAN VETERINARY REVIEW*, Vol. XXVIII, No. 4, January, 1911, p. 518.
13. Schubert, B. Ueber die Bedingungen zur exacten Anwendung der Komplementablenkungsmethode. *Archiv f. wiss. und prakt. Tierheilkunde*, Bd. 35, 1909, p. 319.
14. Schutz and Schubert. Die Emmittlung der Rotzkrankheit mit Hilfe der Complementablenkungsmethode. *Archiv f. wiss. und prakt. Tierheilkunde*, Bd. Heft 1-2, 1909, p. 44.
15. Dedjulin. Versuche zum Nachweis des Erregers der Schweinepest mit Hilfe der Methode Komplementbindung. *Zeitschrift f. Infektionskr. d. Haustiere*, Bd. 3, 1908.
16. Bach. Systematische Untersuchungen über die Brauchbarkeit der Complementbindungsmethode für die Serumdiagnose der Tuberculose des Rindes, Thesis, Leipzig.
17. McFadyean and Stockmann. Epizootic Abortion in Cattle. Report of the Departmental Committee of Agriculture and Fisheries, London, 1909.
18. Lichtenfeld, G. Vorläufige Mitteilung über Komplementbindungsversuche bei Pferdesterbe und Küstenfieber. *Zeitschrift f. Immunitätsforschung*, Bd. 8, 1910.
19. Meyer, K. F. On a specific purulent nephritis of equidae. Report of the Government Veterinary Bacteriologist, Pretoria, 1910.
20. loc. cit.
21. Keyser, F. P. Diagnose des Rotzes am Kadaver mittelst Komplementabindung. *Zentralblatt f. Bacteriologie*, Abt. 1, Orig. Bd. 49, 1909, p. 323 and Thesis (Bern) Leiden, 1910.
22. loc. cit.
23. Valenti, E. Beitrag z. Diagnose der Rotzes durch die Complementablenkung. *Zeitschrift f. Immunitätsforschung*, Teil 1, Originale Bd. 2, Heft 1, 1909, p. 98.
24. DeHaan. De methode der Komplementbindung als middel tot het herkennen van Kwadendroes-genseskundig tijdschrift voor Ned. Indie Del. 48, afl. 3, *Berliner tierärztliche Wochenschrift*, 1910.
25. loc. cit.
26. Miessner and Trapp. Die Komplementbindung beim Rotz und ihre Beziehung zur Syphilis reaction. *Zentralblatt f. Bacteriologie*, Abt. 1, Orig. Bd. 52, 1909, pp. 115-146.
27. Shirnow, A. S. Die Bedeutung der Komplementbindungsreaction für die Diagnostik der Rotzes. *Russky Wratsch*, No. 23, 1909.—*Archiv. Veterinarch Nauk*, 1909, No. 1.
28. DeBlicke, L. Vergleichende Untersuchungen über die Erkennungsmittel der Rotzes. *Zeitschrift f. Hygiene und Infektionskrankh. d. Haustiere*, Bd. 7, 1910, p. 418.
29. Schnuerer. Die Diagnose der ansteckenden Tierkrankheiten mittelst der neuen Immunitätsreactionen. Rapport. 9ter Internationaler Tierärztlichen Kongress im Haag, 1909.
30. Nevermann. Zur diagnostischen Verwendung der Agglutination und der Komplementablenkung bei Rotz. *Berliner Tierärztliche Wochenschrift*, February 25, No. 52, 1909.

(Concluded in June issue.)

"BACTERINS: THEIR RELATION TO VETERINARY PRACTICE."*

BY M. GILBERT GEORGE, AGRICULTURAL COLLEGE, EAST LANSING, MICH.

The interest of the veterinary profession and of the profession of general medicine in biological products is greater now than ever before, and the usefulness of various sera and bacterins in prophylaxis, now centres in the possibilities of bacterins as curative agents.

Whether the general practitioners will give bacterins their unqualified endorsement, it is yet too early to state. But this much is certain, there are many cases where bacterins are of great value; where they are almost, if not quite, a specific. There is also unquestionably cases where they will fail.

The principle involved in the whole procedure of bacterin therapy is the stimulation of the leucocytes to take up the infecting bacteria, and this is accomplished by increasing the opsonic substances in the blood by vaccination. There are certain substances in the blood serum which we designate as opsonins (Greek—opsonos, to prepare food for, or I convert to palatable pabulum) which are distinct and separate from toxins, anti-toxins, etc., which are also found in some sera. The opsonins are constituents of the normal serum, but may be markedly increased on actively immunizing the animal. Opsonins are only one class of a series of antibodies protecting the body from infection. It is said that the opsonins act chemically or physically on the bacteria. It is further stated that the leucocytes cannot normally phagocytize a bacterium which has not come in contact with the opsonins in the serum.

*Presented at the February, 1911, meeting of the Mich. State Vet. Med. Ass'n.

A free streaming of lymph, fresh from the circulation and laden with opsonins, should be promoted and maintained in every focus of infection. Wright has shown that the locality in which bacteria cultivate themselves is deficient in antibacterial substances on account of the sluggish circulation and the clotting of lymph in the sinuses. He also calls especial attention to the paralytic action brought to bear on the leucocytes, by the tryptic ferments liberated from the disintegrating pus cells in abscess cavities and sinuses, and to the futility of attempting to cure them by bacterin therapy unless they are emptied frequently and flooded with opsonic fluid fresh from the circulating blood.

Bacterins.—What are they? They are the dead bodies of bacteria prepared by propagating the etiological microorganism directly from the disease, and suspended in physiological saline solution. The bacteria are then counted in comparison with the red corpuscles in an equal volume of normal blood and adjusted to the desired number by dilution, or they may be standardized by the use of a MacFarland nephelometer. The suspension is so adjusted that it represents approximately a certain number of bacteria in a cubic centimeter. These bacterins contain from twenty million to a hundred million killed bacteria to the cubic centimeter of normal salt solution. By the repeated injection of these doses of dead bacteria, the patient's body is stimulated to produce those complex elements which either dissolve the living bacteria in the blood and tissues or render them more vulnerable to the attack of white blood cells.

The technique of preparing an autogenic or stock bacterin is as follows: Clean the field of infection thoroughly with weak solution of bichloride of mercury, alcohol and ether, or any other good disinfectant. Express the first pus from the inflammatory tract in order to exclude accidental saprophytic bacteria, and with a sterile platinum needle make a bacterial culture on several agar slopes from the deep pus. After the tubes are inoculated they are incubated at 37 degrees C. for from twenty-four to thirty-six hours. The cultures are then washed off carefully with sterile .85 per cent. sodium chloride solution, shaken

to destroy clumps of bacteria and heated in a water bath for one hour to attenuate the bacteria.

There are two general classes of bacterins—autogenous and stock, the former being used by some for chronic suppurating conditions.

Many stock bacterins are now on the market, but we are reluctantly compelled to state that a number of careful experiments have demonstrated that such preparations are practically inert and without therapeutic value. Much more encouraging results, however, are reported from the use of the autogenic type in all infectious maladies. We must admit, however, that stock bacterins have many points of advantage over the autogenous type and are the ones most commonly used. They are convenient, being ready for use when wanted, freedom from contamination, and accurate dosage. The latter feature is in their favor, as considerable technique is involved in the standardization of the autogenous type, which the veterinarian cannot command with his limited laboratory equipment. The stock bacterins are further divided into single and polyvalent bacterins. Stock bacterins are made from multiplied cultures of bacteria from many cases of the same infection and used in the treatment of a like infection in another patient.

What ailments are treated with bacterins? Fistulous withers, poll-evil, quittor, nail punctures, stab wounds, wire cuts, open joints, pulmonary congestion complicating a mild case of strangles, strangles, double pneumonia, swollen collar bruises, pitchfork injury, pus discharging from an opening about the anus in superior sacral region, snag wounds, distemper in puppies, canker, umbilical infection, influenza, anasarca, adenitis, etc.

As to Dosage.—The question of dosage apparently cannot be arbitrarily settled. Each individual case presents new features and conditions, which modify the doses of the suitable bacterin and, especially, the frequency with which it is given. There is a tendency to rely more and more upon the clinical signs for the control of dosage. This has caused a closer study of clinical symptoms and a consequent demand for more accurate methods.

This has been subject to many and wide variations among practitioners of veterinary and human medicine. The typical reaction to bacterins consists of, first, a "negative phase" when the animal's opsonic index is lowered, its resistance to the infection decreased and the disease process intensified, followed by the "positive phase" when the opsonic index rises above normal and improvement takes plac.

How often should an animal be treated? Dr. Wright believed and taught that frequent calculations of opsonic indices were necessary to accurate dosage. No doubt this is true, but the above technique would limit their application as the veterinarian could not command laboratory equipment to carry out such. This difficulty of controlling bacterin therapy by taking the opsonic index has resulted in the adoption of clinical control as a more practical method of determining the proper dosage and the intervals at which the doses may be given for the purpose of stimulating the cells. Therefore, while the taking of the opsonic index is generally admitted to be desirable, the use of this method is not employed to any great extent outside of specially equipped laboratories and by those who are especially trained in laboratory technique.

What are the clinical symptoms? A loss of appetite, elevation of temperature, or increased discharge from the wound thirty-six to forty-eight hours after the injection indicates a full reaction to the bacterins.

It is interesting to note how strangles in horses is treated by Capt. A. G. Todd of the United Kingdom. He isolates and fortifies the *Streptococcus equi* from strangles pus, by passing it through white mice and growing it on inspissated blood-serum at 37 degrees C. for twenty-four hours, large flasks (500 c.c.) of ten-per cent. serum-bouillon are inoculated and incubated for one month, six per cent. sterilized glycerin is now added, after which it is exposed in an incubator at 60 degrees C. for two days over unslaked lime. This kills the organisms and causes evaporation of the culture down to a thick paste, which is dissolved in one-half per cent. carbolic acid and sterilized distilled water, and

brought up to one half its original bulk, which makes it thin enough to pass through an ordinary hypodermic needle. It is now run into five c.c. sterile tubes hermetically sealed and stored ready for use. This material, which he has called Strangline, was injected subcutaneously in doses varying from one to ten c.c. The horses receiving the maximum dose had a large local reaction lasting four to five days, and a thermal reaction lasting two days, so it was decided to use it in five c.c. to ten c.c. doses in the treatment of the disease.

The efficient and practical use of Bacterins should be borne in mind by the progressive veterinarian, and put into practice when found worthy and useful in classes of cases where their application proves beneficial. Let us hope that the veterinarian of to-day will make an added effort to familiarize himself with Bacterin Therapy.

DR. B. F. KAUPP, of Fort Collins, Colorado, has been testing hogs on the college farm, for tuberculosis, using both the intradermal and subcutaneous methods.

DR. D. D. KEELER, Salem, Oregon, in renewing his subscription to the REVIEW, which he says he will keep up as long as he is able to read veterinary literature, sends the following interesting letter: "We are having quite a number of cases of 'staggers,' as the farmers call it, but which is, in reality, we think, ergotal poisoning, such as the cases reported in the December number of the AMERICAN VETERINARY REVIEW. There has been some loss, but not so great as some former years, as we think we know what it is and are learning how to manage it. Some farmers persist in feeding the patient with oat-hay or oat-straw, and so keep putting the poison in. The muscles cramp badly, and the patient has much difficulty in keeping its feet, especially if on a plank floor, for on the floor they seem to have a swimming sensation, and when they go down a few times they are unable to rise, and the muscles of the bowels become cramped; the bowel is constipated, and death soon puts an end to the scene. I feel like thanking you, certainly congratulating you, on so fine a number as you *continue* to give us, twelve times each year."

REPORTS OF CASES.

"A PIG TALE."

By JNO. MERRIMAN, M.D.C., Bear Lake, Mich.

Without the usual preliminaries that most writers exhaust the patience of their readers with before the villain is captured, I will try and describe an interesting case of last summer.

History of the Case.—The flour mill of my town has been keeping hogs for a few years and have always had sick pigs for some reason and, as the story goes, they suspected some unscrupulous person of giving them some poisonous substance. Last year they built a new house and pen and started anew with a few sows with fair-sized litters, and in a short time these acted peculiar, as their others had done.

Semiology.—When I looked into the pen I saw so many symptoms I did not know where to start first. Some were dull and wouldn't move unless treated quite roughly; others were excitable and hard to keep track of. Some were hiding their heads under straw or wood piles. The majority were humped up and had a crampy gait. Dyspnœa, flatulence, constipation and eyes wild and congested. Some were on their backs pawing the air and yelling; others laying on the abdomen all stretched out, and enjoyed that position, seemingly. The owner said they frothed at the mouth, had convulsions, and a few had died.

Diagnosis.—I came to the conclusion that gastric impaction was the cause, as there was considerable dyspnœa and bloat, but the owner thought differently as he fed nothing but slops. I thought of the migrating stage of the *Trichina spiralis*, and suspected internal parasites. I told the owner I suspected some stomach and bowel trouble, and suggested killing one (of course the runt) and we soon found out the cause.

Post Mortem.—It is not in accordance with the rule to give the post mortem or pathological anatomy before treatment has

been expounded, but I have on a few occasions found it a good move, especially with a bunch of young pigs. As before stated we soon arrived at the cause, that the professors so easily tell us to remove before naming over about half the drugs in the Pharmacopeia. The principle feature of the post mortem was an impacted stomach, its contents being a chewed-up, stringy looking material resembling the interior of a sweat pad. On removing the stomach it felt like an indoor baseball. There was extensive enteritis around the pyloric portion of the small intestine. Contents of bowels, semi-solid.

Prognosis.—Unfavorable.

Therapeutics.—I believe surgical treatment would have been advisable if the hogs were washed perfectly clean and the operation performed on the kitchen table under aseptic precautions.

I prescribed a few simple drugs as: mag. sulph., four ounces; powd. gentian and zingiber, each two ounces; calomel, ten grs. Give as one dose for big ones, divide into four for little ones, three times a day. They got this medicine and all the water they wanted for two days, when they seemed all right.

We thought the contents of the stomach to be an old sweat-pad or rope that they might have eaten, but after some investigation found out it was from the bags and frayed ends of strings used at the mill, and was fed to them with the sweepings of the floor.

A CASE OF CANCER OF THE SOLE CURED BY AUTOGENOUS BACTERIN (CRUDE) METHOD.

By W. T. WEBB, V.M.B., Quarryville, Pa.

During the month of October, 1910, I was called to attend a case of cancer of the foot, in a fine seven-year-old road gelding. Two other veterinarians had tried their luck and failed.

The frog, bars and quarters of the sole were in a suppurating condition. Excretion of a foetid greenish pus was present with proliferative horn of a damp, shiney, character, in abundance. I administered a local anesthetic over the plantar nerves and performed an heroic operation with scalpel, hoof knives, forceps and scissors.

I then soaked the foot in a creolin bath and applied equal parts of calomel and iodoform and bandaged. I instructed the owner to follow the same treatment once daily until my return a week later.

On my next visit I began using a stock, polyvalent bacterin, with alternate soaks once daily of ten per cent. creolin and lime and sulphur dip; after which iodoformed ether was used and foot dressed with cotton and a steel plate inserted under the shoe to keep the dressing in place. The frog took on a healthy appearance under this line of treatment.

I gave six doses of the bacterin in accelerated doses and used nuclein solution (15 c.c. P. D. & Co.) the last two times the bacterin was injected.

On January 4, 1911, I called to see the horse. The frog at this time seemed perfectly healthy, but there was no improvement of the sole.

The owner was disgusted and told me he had decided to destroy the animal. I argued the case and explained the autogenous bacterin treatment and asked him to let me try it as a last resort. He thought he had gone to enough expense and did not believe the foot would get well under any treatment. At last he offered to sell me the animal at almost nothing if I would promise not to sell him unless he was cured. I assented and had the horse brought to my stable where the foot was washed out with water, dressed with oakum and a bandage and left alone for two days. I then collected the material, macerated in a mortar with about four times the quantity of .85 per cent. sodium chloride solution, filtered the solution and heated at 130 degrees F. in a water bath for four hours. The solution was again filtered and five c.c. of the bacterin injected. I continued this treatment every fifth day, gradually bringing the dose up to fifteen c.c.

The foot improved rapidly and only six injections were made when no more material could be collected. One small abscess developed after the last injection, which responded readily to treatment. I noticed no negative phase, but had a rise of temperature of one degree F. to 1.5 degrees F. after each injection.

I used in connection with the bacterin treatment occasional applications of iodoformed ether, 1.8; about four doses of nuclein solution 15 c.c. at intervals and two courses of Fowler's solution in increased and decreased doses. I also blistered the coronet with boniodide of mercury and cantharides ointment, 1.8.

On February 20 the horse was shod, the foot padded with oakum soaked in pine tar and a thick felt pad nailed under the shoe. I then began to exercise him daily and finding him an excellent roadster began to use him occasionally in my practice.

On March 2 the former owner stopped at my place. I took him for a drive with the horse over a stone road and then stopped at a shop and had the shoe removed. The foot was still a trifle hollow, especially in the extreme corners of the heels, but all horn was in a dry healthy condition.

I offered to let him have the horse at a nominal sum, but as he had bought one to take his place and seemed afraid that the canker might show up in the future, he told me to dispose of him as I saw fit, which I have since done at an excellent profit.

UNUSUAL AND INTERESTING CASES OF DYSTOKIA.

By WALTER S. NICHOLS, B.V.S., Ravenna, Neb.

Case No. 1.—On March 23, 1911, I was called to attend a case of dystokia in a mare, sixteen years old, weighing 1,400 pounds.

On examination I found the fœtus in the uterus transversely, the head to the left, the fore feet and legs were in the left uterine cornu, and the hind feet and legs were in the right uterine cornu. The uterus was ruptured just anterior and to the left of the entrance to the pelvic cavity. The head and neck of the fœtus protruded through the rupture into the peritoneal cavity of the mare. The colt being dead and the mare in a hopeless condition I ordered her destroyed. This mare had not been seen to labor at all, but evidently she had been in labor the night previous.

Case No. 2.—On March 28, 1911, I was called to attend the following case of dystokia in a mare, seven years old, weighing 1,200 pounds.

This mare was not due to foal until six weeks later. On the day previous to being called she had been severely kicked by another horse in the right flank, just below the right lumbar region. On examination I found breach presentation with tarsal joints flexed and in the entrance of the pelvis. The fœtus being small I had no trouble in delivering it. After delivery I examined the uterus carefully and to my surprise found it rup-

tured about six inches anterior to the bifurcation, involving the right cornu. The rupture was not less than six inches in diameter. Several blood clots were present, but there was no hemorrhage at that time. This indicated that the rupture had taken place some hours previous. I gave an unfavorable prognosis and advised that the animal be killed to avoid more suffering.

To ascertain the opinion of my professional brethren I ask this question, Was this rupture due to the kicks received the day previous to the delivery of the foetus?

My opinion is in the affirmative.

DR. J. A. McCLURE, of Billings, Mont., writes: "After a delay of a few days I am permitted a few moments of time to attend to a very pleasant duty and privilege, that of *renewing my subscription to the best journal* I have come to be acquainted with for a busy practitioner of veterinary, medicine. I thank your staff for so *faithfully* looking after the interest of our worthy calling. Wishing you a *prosperous* year I remain as ever yours."

THE ALUMNI ASSOCIATION of the NEW YORK-AMERICAN VETERINARY COLLEGE (Vet. Dept. of New York University) held its annual dinner on Wednesday evening, April 26. The occasion was honored by the presence of Commissioner Raymond A. Pearson, of the New York State Department of Agriculture, whose address was one of the finest that has probably ever been delivered before a body of veterinarians by one without the profession, on subjects of such vital importance and so closely related to those within it. It was not the commissioner's first visit to that body, and it is sincerely hoped it will not be his last; as his visits are very much appreciated and very much enjoyed.

Prof. Harry D. Gill proved the wisdom of the dinner committee in appointing him toast-master, as his versatility made him peculiarly fitted for the role. Hoskins came out with his usual forcefulness, Dean Coates, poetic; Blair, eloquent, and finally the venerable Ferster, humorous. President R. S. MacKellar's introductory remarks gave voice to the satisfaction that his beaming countenance expressed, in the affairs of the organization. Which, by the way, have again been entrusted to his care by his re-election at the afternoon meeting. Secretary Carey and Treasurer Harms were also re-elected.

ABSTRACTS FROM EXCHANGES.

ENGLISH REVIEW.

By PROF. A. LIAUTARD, M.D., V.M.

FRACTURE OF THE TIBIA IN CATTLE [*F. J. Dunning, M.R.C. V.S.*].—The writer when at first was called to cases where setting was difficult to apply and prospects of recovery doubtful, had a tendency to recommend slaughter. But now by long experience, he has learned not to be in such a hurry and he does not hesitate to set the fracture and he has success in following this method: A bandage between three and four inches wide, of thick, unbleached calico, is soaked in plaster of Paris or any ordinary paste, which, by the way, he has found best to use. He then commences winding it round above the hock, until a level surface of practically the same circumference is obtained, reaching from the flexure and point of the hock to as close up to the stifle as possible to bandage. Short wooden splints are then applied outside and in and fastened tight with paste or plaster bandage. When set the limb is absolutely rigid from the stifle to the hock and slings are unnecessary. In three or four weeks consolidation has taken place.—(*Veter. Record.*)

RUMENOTOMY IN CALF—REMOVAL OF FOREIGN MATTERS [*J. P. Hamilton*].—A four-months Short-horn calf has been ailing, he is dull, breathes heavily with a grunt. He has fits after feeding. Impaction of the rumen or one of the stomachs due to a foreign body is suspected. Oleaginous purgatives, stimulants and anodynes form the base of a treatment which is without effect or gives only temporary relief. As the calf gets worse, an operation is decided upon. Rumenotomy was performed with all indicated care and when the hand was introduced in the rumen it found a mass consisting of a large quantity of binder twine with undigested food, all squeezed into a lump. This was extracted and on examining the binder twine was found to be in

short lengths which the calf had picked out from the straw bedding. The operation was concluded by the closing of the wound and cicatrization took place without any serious complications.—(*Veter. Record.*)

CASE OF GOITRE IN THE HORSE—OPERATION—DEATH [*A. W. Noel Pillers, M.R.C.V.S.*].—Twelve-year-old pony had swelling in the throat which has grown considerably since three weeks and has recently caused difficulty in deglutition. When seen the growth was a rounded, well-defined mass, extending from an inch behind the vertical ramus of the lower jaw, nine inches down the neck. It projects on both sides, but more so on the right. It is about six inches in breadth across the front of the neck. The general condition of the pony is otherwise very good. The diagnosis of goitre was made and medicinal treatment first tried. Injections of iodine, iodide of potassium internally, but all gave no results. The animal was then cast, chloroformed and operated. The dissection and removal of the tumor was accompanied with unexpected hemorrhage. The wound left was very large and was dressed with chinosol. After a little reacting fever which lasted a few days the pony did well for a short while, but on one morning his breathing became very distressed, he fell down, had a profuse hemorrhage and was then destroyed. The tumor had made a deep groove in the trachea and measured eight inches in length, four in width and weighed four pounds. Its nature of cystic adenoma was made out by microscopic examination.—(*Veter. News.*)

OPHTHALMIA IN TETANUS [*S. J. Matton, M.R.C.V.S.*].—A mare had lockjaw, and nine days after the first manifestations the cornea of both eyes was cloudy. There was a discharge from both eyes. After recovery from tetanus the eyes cleared off entirely, except the left cornea, which remained slightly blemished by small yellow specks. The trouble of the eyes was treated with lotions of sulphate of zinc.—(*Veter. Journ.*)

ABDOMINAL ABSCESS IN A HORSE [*Capt. E. S. Gilbert, M.R.C.V.S.*].—Four-year-old gelding had slight fever and has been in poor condition; he was said to have frequent loud borborygms. He died without a positive diagnosis being made. At the post mortem a large abscess uniting the stomach and spleen was found. It contained over one quart of pus. A number of small

ones were also situated on the diaphragm, the mesentery and the large colon. The liver weighed twenty-five pounds.—(*Ibidem.*)

ADRENALINE AND ACUTE LAMINITIS [*Capt. E. A. Nicholas, M.R.C.V.S.*].—Two new cases of successful treatment of laminitis by adrenaline injected on each side of both fore legs. Cold bran poultices were also applied to the feet.—(*Veter. Journ.*)

HERNIOTOMY IN A VALUABLE RUSSIAN HORSE [*A. Chinniah, G.B.V.C.*].—After describing the *modus operandi* the author writes: "Having decided not to adopt the conservative process of retaining the testicles, I hurriedly opened the left sac and felt the ring which I found free. The whole scrotum with the testicles were enclamped in my metal clamp, and I screwed up both very tight. On the third day the scrotum and testicles were cut away about three inches below the clamp. This dropped on the eighth day."—(*Ibidem.*)

INTRAMUSCULAR INJECTIONS OF A SOLUTION OF COLLARGOL IN ECZEMA [*J. A. N. Da Cunha, G.B.V.C.*].—This treatment was applied to a terrier dog which had a troublesome eczematous eruption which had been treated in various ways for nearly a month and a half without result. An intramuscular injection of three c.c. of one-per cent. solution of collargol every alternate day with external applications were followed by radical recovery after a few days.—(*Ibidem.*)

ASPIRINE IN CANINE PRACTICE [*Capt. E. S. Gilbert, M.R.C.V.C.*].—The author has had excellent results by the use of aspirine in dogs where ordinary febrifuges had failed. The effects being marvelous and the temperature rapidly being reduced. He mentions a case where a dog whose temperature had been 106 degrees F. for a week, often going over 107 degrees, which in short notice was relieved with aspirine.—(*Ibidem.*)

POST-PHARYNGEAL TUMOR [*Arthur New, M.R.C.V.S.*].—A horse that has been ailing for some time, had strangles. He presented some difficulty in swallowing and he had the throat considerably swollen. There were several abscesses in the maxillary space. He was treated as having strangles, rather a bastard attack, with post-pharyngeal abscesses. Tracheotomy

had to be performed and the horse got some relief. Four days later a large quantity of foetid blood and pus were discharged from both nostrils and the whole head became very swollen. He then had bloody urine. He grew worse and was destroyed. A fibrous tumor attached to the outer wall of the pharynx and adherent to the guttural pouches and hyoid bone was found. It weighed one pound; there was considerable infiltration all round.—(*Veter. Record.*)

POISONING BY CHARCOAL FUMES [*Capt. E. P. Argile, A.V.C.*].—Nine-months old dachshund was placed in an unventilated room with a bitch and three puppies. A bucket of burning charcoal was lighted in the room to prevent them from catching cold. The next morning the bitch and puppies were dead and the dachshund very ill. He had no power in his forelegs, kept his head on the ground, howled continuously, had spasms of the neck and hind legs. The pupils were dilated. He seemed unable to see anything. He howled much when he was handled. His pulse was 170 and weak. The temperature normal. The respiration irregular and shallow. If left alone, he remained quiet, but became excited and had convulsions with any motion or touch done on him. Treated with fresh air, warm covering, soap-suds injections, he improved very little. After two days he was able to stand and walk. Yet he was blind and had convulsions. As he did not improve fast enough the owner had him destroyed after one month of care and treatment.—(*Veter. News.*)

SPINAL ANKYLOSIS FOLLOWED WITH RUPTURE OF THE AORTA [*Lieut. H. C. Stewart, A.V.C.*].—An army horse has worked for ten years with only twelve entries at the infirmary. One day while being ridden, he was found in great pain; the near hind leg is continually raised and lowered. He has cold, clammy sweat and is shivering. The temperature is 102 degrees F. Stimulants were given and after two hours' rest he was able to walk into camp. The case was considered as one of contusion of the hind leg and treated as such. Seven days later, he had but a slight stiffness behind, the lameness had entirely disappeared. The next morning the horse was found down and dying in his stall. At the autopsy a rupture of the posterior aorta was revealed with abundant hemorrhage within the abdominal cavity. The bodies of the fifth, tenth and fourteenth dorsal vertebræ were nearly double their normal size from adventitious

bony growths; that on the tenth being the largest. The rupture had occurred under this last growth. The whole of the vertebral column from the fifth to the fourteenth vertebrae were completely ankylosed. The fifth rib on the near side was double at its upper third and the sixth twice its normal width.—(*Veter. Record.*)

FRENCH REVIEW.

By PROF. A. LIAUTARD, M.D., V.M.

OBSERVATIONS ON THE TREATMENT OF TETANUS WITH SERUM [*Mr. A. Chazeau*].—Is antitetanic serum in large doses indicated in developed lockjaw? Is it equally indicated in both, the acute and the chronic form of the disease?

While the action of the serum as a preventive is adopted by all, its curative properties are doubted. A record of six cases is given. No slings were used in either of these. They are clinical facts. In two acute cases treated by injections of antitetanic serum in large doses, death took place. In three cases of acute disease, which were treated without serum, recovery took place in the three. In one case of chronic tetanus treated with antitetanic serum, there was also recovery.

Conclusions of the writer: In the acute form, the serum in large doses has no curative effects. On the contrary it seems to increase the acuity of the disease which is almost always followed by death. In the chronic form the injections of serum seems to increase the resisting power of the organism by neutralizing the tetanic toxins. If the serum has made its proofs as a preventive, it is not so as a curative. Its action may be efficacious in chronic lockjaw but in the acute form it is contraindicated.—(*Rev-Gene. de Medec. Veter.*)

INTOXICATION OF PIGS WITH MUSHROOMS [*Mr. Morel, Sanitary Veterinarian*].—Having received an evening meal made of potatoes, cabbage and leeks mixed with water in which about five pounds of mushrooms (*Armillaria mella*) had been boiled, four pigs the next morning are very sick. One, which is about dying, is bled and the author sent for. He found the three that remained very ill and after a few days they died. The symptoms

that they exhibited were: Loss of power, animal standing against surrounding objects to prevent falling, cutaneous sensibility much diminished, staggering walk with automatic motions and dropping on the ground; abundant salivation, no vomiting nor alvine dejections. Post mortem: Irregular red patches on the skin, muscles and thoracic and abdominal lymphatic glands congested; liver, kidneys and lungs also. These organs have the aspect observed in animals that have died from asphyxia. Stomach distended by food. The mucosa is highly colored, and eroded here and there. Small intestine empty, bloated and congested. Treatment with tartar emetic and ipecac failed. The meat was thrown away.—(*Journ. de Zootech.*)

BIER'S METHOD WITH CUPPING [*A. and R. Lasserre, Army Veterinarians*].—Following their investigations on the advantages of this method the authors relate two cases where they have obtained superior results by resorting to the use of simple dry cupping. One was in a mare which, from a kick on the right stifle, became very lame with an attack of acute arthritis which remained rebel to all ordinary treatment. Cupping was then used for five days and from that date improvement began to show, the local and the general condition improved and after a month of treatment recovery was complete.

Again in a horse the kick which he had received on the lower internal side of the left hock was complicated with extensive arthritis and severe periostitis. Temporarily relieved by firing, he soon returned lame after a short time with suppuration of the hock joint and all the manifestations of purulent synovitis. Treated without good results it was thought that it would be better to destroy him and Bier's method was just tried as a last chance. After three days there was slight improvement and in two weeks the animal began to put weight on his leg. The application of cupping which had been used, was continued for nearly one month and complete recovery, although slow, permitted him to resume his work after having been laid up only two months.

The authors have had a number of successful recoveries by the use of Bier's method and cupping and while they have obtained those results they prefer the simple use of the band to apply the method in preference to the use of cupping.—(*Rev. Veter.*)

VERMIFORM DERMATITIS OF DOGS [Prof. L. G. Neumann].

—A certain number of observations have permitted the establishment of the presence of embryos of nematods in the morbid liquids of some dermatosis. Sometimes they were microfilaria and at others Rhabdites. The former are the same as those found quite often in the blood of dogs, they are embryos of *Filaria immitis* or of the *Filaria recondita*. The latter are small worms of the *Anguillulidæ* family, which live as saprophites in damp ground, plants or putrifying substances and which may be carried on the body of dogs. It has seemed useful for the author to resume what is known on the subject. The observations of microfilariosis were made by Rivolta (Italy), Jansen (Japan), Rosso (Turino), Mazzanti (Verona), Del 'Acqua (Milano), Tabasso (Turino), Bonvincini (Bologna), Miller (Calcutta). Among the anguillulidæ are known the observations of Siedamgrotzky, of Schneider (Giessen), Kunnemann (Hanover), Horne, Lemke, Liebtre, of Hanover. The concise description of the manifestations and history of these cases are quite interesting for those who are likely to meet dogs with their peculiar forms of dermatosis.—(Rev. Veter.)

TREATMENT OF PNEUMONIA BY ANTISTREPTOCOCCIC SERUM [Mr. G. Parant].—This is to rehabilitate a treatment which has been condemned by some as having given rise only to serious complications. In this case a mare, which had refused her food the evening before, was presenting all the symptoms of pleuropneumonia of the base of the left lung; yellow membranes, thick cough, rusty nasal discharge, complete dullness on percussion on the postero-inferior part of the left lung, thick mucous râles on the upper part and loss of respiratory murmur below. Pulse, 66; respiration, 30; temperature 42.2 degrees C. Mustard poultices and acetanilide internally were prescribed. As there was no change in the symptoms, 30 c.c. of serum were injected and 50 grammes of alcohol at 95 degrees given internally. From this moment the temperature begins to run down to 39.6 degrees, 39 degrees, 37.4 degrees. The disease followed its short course, the serum having been injected four days when it was stopped and the treatment continued with stimulants and laxatives. The disease lasted ten days altogether when resolution was almost complete. In this case the temperature began to drop as soon as the first injection of serum was made.—(Report. Veter.)

BRONCHIAL LITHIASIS [*Dr. V. Ball*].—This case was observed in a cat, aged thirteen years. He had had spells of coughing corresponding to true crisis of pains from calculi, which were complicated with dyspnea, loss of appetite and great emaciation. The expectoration of a *broncholith* by the patient, if it had taken place and if it had been detected, would have permitted a diagnosis. The cat died in a crisis of asistoly with pulmonary edema. This disease has not yet been mentioned in veterinary works. The author has already observed in an aged horse a case of *pneumolith* on the posterior lobe of a lung where it was situated on the surface in a small cavity having calcareous walls and forming a loose calcareous little mass, somewhat rough and measuring three centimeters in length.—(*Journ. de Zootech.*)

AUTOMUTILATION IN ANIMALS [*Mr. C. Blatin*].—Referring to the cases of so-called automutilation already recorded, the author speaks of the case of a seven or eight-months spaniel dog which had weakness of the hind quarters and slight chorea. He also had on the belly and on the internal face of the thighs cutaneous eruption. These symptoms grew worse rapidly, the paralysis became more marked and the symptoms of chorea quite strong. The dog constantly licked his stifles and the muscles of the thighs. He was muzzled, but the next day he was found with the muzzle off and the muscles of the anterior face of the femur as well as the skin all torn away. He was killed. In this as in the cases described by some already, subacute meningo-encephalitis lesions were found and it seems that lesions of the nervous system play an important part in the etiology of automutilation in modifying the general sensibility.—(*Ibidem.*)

BELGIAN REVIEW.

By PROF. A. LIAUTARD, M.D., V.M.

RUPTURE OF THE UTERUS IN THE DOG [*Professors Hebrant and Adj. Antoine*].—These two cases are recorded as being interesting by the fact of the rupture having taken place from similar causes. In both, the various stages of the pregnancy were

normal, and the manifestations of labor were observed. But the very marked atresia of the vulva, with that of the vagina, explained satisfactorily the rupture, the neck, the os uteri having failed to give away, notwithstanding the muscular contractions and the work of the uterus, its coats gave away and the rupture took place.

First Case. Sheep dog was covered ten weeks ago, all the normal signs of gestation followed and when arrived at term the dog prepared herself and suddenly all subsided without any foetus being present. Exploration of the external genitals shows a vulvar and vaginal atresia, a probe can scarcely be introduced in the uterine cavity. The abdomen exhibits all the indications of ascitis, exploring puncture gives escape of brownish fluid, odorless, which by examination justifies a diagnosis of purulent peritonitis. Laparotomy is performed. On opening the abdomen very abundant quantity of fluid escapes. It was similar to that drawn with the exploring puncture. Hairs were mixed with it. After thorough washing of the peritoneal cavity a foetus is exposed among the intestinal circumvolutions and taken away. The uterus is brought out and found to contain another. The left horn is torn transversely and the edges are indurated. The right horn is empty. The uterus is emptied of its contents, the rupture sutured and the abdomen closed after a thorough disinfecting washing and a drain tube, being well secured, the dressing is completed. The dog has torn it the next day. New sutures and new bandaging. Dog dies the next day. At the post mortem with the discovery of extensive lesions of peritonitis, there were found the cadavers of four foetuses, one between the liver and right hypochondriac region, and the three others concealed by the intestines.

Second Case. This was observed some six months after the first in a griffon which presented the same history about the signs of gestation and parturition. Afterwards, since three or four days, she makes violent expulsive efforts. She also has a marked vulvar atresia. Laparotomy is suggested. A large bag of suspicious looking fluid is seen as the abdomen is opened. In the fluid there is floating a dead foetus. Then two others are found. The uterus is torn on its inferior face with an opening involving the body of the organ and the right horn. The dog was destroyed.—(*Annals de Brux.*)

DIAPHRAGMATIC LACERATION IN A DOG [*Mr. Facs*].—Result of an autopsy made on a dog to which the owner had administered a dose of twenty grammes of castor oil, and which had been found dead the next morning. During the afternoon that the oil had been given, the dog had made violent efforts to defecate and manifested severe colics. Death had taken place during the night. On opening the abdomen, no inflammatory lesions were found, but the stomach was not seen. Tracing the duodenum it was found having passed through a laceration of the diaphragm in its middle close to the vertebral column. The stomach in the thoracic cavity was much dilated, congested and pressing against the lungs and must have interfered considerably with respiration during the lost moments of life.—(*Bullet. de Mede. Vet. Pratique, Itali.*)

THE Local Committee of Arrangements of the New York State Veterinary Medical Society are busily engaged making preparations for the coming meeting in Brooklyn; but are not quite ready to make an announcement this month. We would urge members to respond with as much expedition as is possible to queries they may receive from the committee relative to their literary contributions, so that an outline of the program may be formed without unnecessary delay.

ONE of our Western readers writes: "I have just finished reading in the REVIEW an article on the reformation of veterinary degrees by Dr. Hughes, of Chicago, and thought that the degree which Mr. ——— has given himself may be of interest.

"The degree is very characteristic of the man, as he went to the Islands several years ago as teamster on the 'Dix'; he failed to make good as a farrier, and upon his return got out this card:

—————, A. V. S., U. S. A.
Late Acting Veterinary
and Chief Ferrier
Dep't. of the Phillipines

"For some reason he has given up his profession. I hope no one will adopt this degree."

ARMY VETERINARY DEPARTMENT.

MEETING OF ARMY VETERINARIANS AT THE DIVISION MANEUVER CAMP, FORT SAM HOUSTON, TEXAS.

A meeting of the veterinarians of cavalry and field artillery present at the Division Camp, Texas, took place on April 14. Present were: Drs. Le May, Schwarzkopf, Gage, Gould and Mitchell. Dr. Geasson was absent, as also Dr. Johnson, Commissary Department, U. S. A., who could not attend.

Dr. Le May was elected chairman. In an informal discussion plans were considered for future army veterinary legislation. It was agreed that the old Senate Bill 1692, should be considered as dead, and that an entirely new bill, on more modern lines, should take its place. The consensus of opinion was that by fighting for the old bill, years of progress had been lost, for which compensation must now be found in an attempt to gain an army veterinary organization with enough of rank and promotion for the veterinarians composing it to guarantee greater efficiency of the veterinary service and a just status of the veterinarian.

It was further agreed that the new bill should first be endorsed by all army veterinarians to insure unanimous satisfaction and consent, and if this was reached, to introduce the bill directly into Congress without submitting it to official channels.

It was, finally, the opinion of the veterinarians present, that the fight for the new bill should be left to properly selected men outside the army, and that the American Veterinary Medical Association be petitioned to select a strong legislative committee to consist, in the majority, of veterinarians known to be democrats of political standing, as otherwise any attempt at army legislation would be futile.

One of the veterinarians present was instructed to draft the new bill along the lines suggested, to be further considered at the next meeting to be called as soon as all would be again present in camp.

OLAF SCHWARZKOPF.

ARMY PERSONALS.

Veterinarian Richard B. Corcoran, Twelfth Cavalry, has been retired from active service on account of age. He will make his home in Utah. There are many army officers who wish him a happy and quiet life in his declining years, after fighting hard for any good cause throughout his career.

There are thirteen veterinarians present at the Division Maneuver Camp in Texas: Six of the regular army, one as meat inspector of the Commissary Department, U. S. A., and six civilian veterinarians of the Quartermaster's Department, who were engaged by telegraph for the camp. A Division Field veterinary hospital has been established with stabling facilities for one hundred horses and it has shown its need, as there are over six thousand horses and mules in the camp.

O. S.

THE Report of the Milk Commission of Philadelphia: Through the courtesy of Dr. C. J. Marshall, of Philadelphia, we recently received a copy of the report of the Milk Commission of Philadelphia. This is without doubt the most complete report on such a subject that has ever been published by any city. It is full of instruction, and bespeaks the fitness of the Commission. It is not possible to do justice to said Commission by any descriptive account of the published report; it must be seen in order to thoroughly appreciate its scope.

THE South Carolina Association of Veterinarians is the name of an organization started in that state last year; and while the membership is necessarily small, their ambitions are large, in their endeavor to aid in the work of advancing the profession that is going on everywhere in America to-day. The officers are: Benjamin McInnes, Charleston, President; M. Ray Powers, Clemson College, Vice-President, and Clarence E. Smith, Greenville, Secretary-Treasurer. The next meeting of this association will be held in Charleston, in August.

CORRESPONDENCE.

THE COMING MEETING OF THE A. V. M. A.

Editors AMERICAN VETERINARY REVIEW—As the time is fast approaching for the next annual meeting of the American Veterinary Medical Association, a word or two concerning the place of meeting selected by the Executive Committee would seem to be in order about this time.

As has already been announced, the City of Toronto, situated on the North Shore of Lake Ontario in the Province of the same name, has been selected for the great event.

The city itself is recognized in the Dominion as the Queen City of that portion of our Hemisphere. The name itself is of Indian origin, and for our purpose seems apropos, for, when it is literally translated, it signifies "a place of meeting," and, in early times, was a rendezvous for Indian tribes in Councils of War. It covers an area of about twenty-five miles, and is provided with all the modern improvements of an up-to-date metropolis, having a most excellent street-car system, as well as other convenient means of transportation. The streets have recently been illuminated at night with a most brilliant system of electricity, the power for which is derived from the Niagara Falls, as is also that for the street-car system above referred to. The hotel accommodation is as good, perhaps, as any on the Continent.

At the foot of Yonge street, which may now be regarded as one of the principal business thoroughfares of the city, is to be found a nicely equipped fleet of steamers which run in all directions—to Hamilton, at the head of the lake; to Lewiston, on the south shore of the beautiful and historic Niagara River, and east to Montreal, Quebec and other ports of interest and importance on the banks of the romantic, rapid-flowing St. Lawrence River. As a railroad centre Toronto is second to none in the Dominion, and can be readily reached from all railroad points of North America. The government of the city is vested in a Municipal Council, consisting of Mayor and Aldermen, whose

duties have hitherto been conducted in a most satisfactory manner.

As an educational centre it is perhaps in advance of any other city in the Dominion of Canada, having a university with federated colleges, the students of which run up in numbers to between four and five thousand. One of the most interesting features from an educational standpoint in the broadest sense of the term is the Canadian National Exhibition, which is generally conceded to be the largest and most important of any exhibition of the kind in the world. It may be well in this connection to say here that this exhibition, which is even worthy of the name of a World's Fair, opens the day after the meeting of the A. V. M. A. closes, and it is hoped this institution, together with the meeting of the society, will very richly repay one for a visit to the Queen City of the Dominion.

Turning, for a few moments, to the stamping ground of the meeting, it may be interesting to intending visitors to learn that the Property Committee of the University of Toronto authorized the President of that Institution to assign whatever buildings we needed on the Campus for the entertainment of the association. The local committee have selected the Convocation Hall for holding the principal meetings of the association. Those who have visited this building have all been most eulogistic in its praise, some even going so far as to say that a better place for the meeting could hardly be conceived in anything like reason. The hall itself is arranged to seat 1,700 in the main building with 100 chairs on the rostrum. The room, which is circular, is surrounded by a foyer about fifteen feet in width, exquisitely tiled and otherwise ornamented to give it a very classic appearance. Across the foyer and to the west of the building, is a large oblong room, 100 by 60 feet, and well illuminated. It has been thought that this would be a good place to use for a Liberal Veterinary Arts Department, in which could be exhibited instruments, books, medicines, etc. Good street-car service within a "stone's throw" of the building.

The Queen's Park, on which the university and Parliament buildings are situated, is within walking distance of some of the principal hotels of the city, providing the pedestrian does not object to a stroll of from three-quarters to a mile in the morning and the evening, the most of which would be along University avenue, a boulevard which is decorated with handsome trees, monuments and buildings, notable amongst the latter being the

Parliament House, which contains, amongst other things, the Department of Agriculture, where veterinary affairs in the line of education are officially controlled in this Province, and from this department much encouragement is given to the local committee of the A. V. M. A. for their efforts in securing the coming meeting for this city, and the signs of the times indicate that a very large and enthusiastic meeting and a great educational treat is in store for those who take advantage of that which is offered.

E. A. A. GRANGE,
Chairman Local Committee of Arrangements.

State of New York, Department of Agriculture, Albany.

April 10, 1911.

Editors of AMERICAN VETERINARY REVIEW, New York, N. Y.:

I am pleased to inform you that I have appointed Dr. John G. Wills as chief veterinarian in this department, salary \$3,000. Dr. Wills came to us a little more than a year ago to serve as first assistant veterinarian under Dr. Devine, who was then chief veterinarian. Since Dr. Devine's withdrawal to resume practice a diligent search has been made for the best qualified man available who might succeed him. Dr. Wills secures the appointment as the result of a civil service examination, but in addition to this he was entitled to the appointment because of his excellent record under the civil service. By reason of his promotion, Dr. Charles Linch, of Albany, assistant veterinarian, has been promoted so that he now ranks as the second officer in the bureau. So long as is necessary, Dr. Devine has generously arranged to spend an occasional day in Albany for the purpose of giving advice and assistance.

Very truly yours,

R. A. PEARSON, Commissioner.

Editors AMERICAN VETERINARY REVIEW—Please permit me to express through the columns of the REVIEW my interest in and appreciation of the contributions of Drs. Glover and Schwarzkopf on the "Problem of a Uniform Veterinary Degree." This

is a subject which should enlist the interest of every veterinarian on the American Continent, for certainly the great variety of degrees and appellations is almost absurd if not, indeed, disgraceful.

Some years ago, in 1895 I think, I contributed a few lines on this same subject to the then *Journal of Comparative Medicine and Veterinary Archives*, to which Professor Schwarzkopf replied; and while he did not entirely disagree with me in the main, being manifestly a much better scholar than I, he presented a much more lucid philological treatment of the subject.

At the time the article in the *Journal of Comparative Medicine*, above referred to, appeared my friends here in the East seemed to regard the matter of very trifling importance. I trust that through the able contributions of Drs. Glover and Schwarzkopf, the problem will be treated with the amount of respect which its importance demands. If every officer in our army could be induced to read Dr. Schwarzkopf's articles, now appearing, I feel that the establishment of a Veterinary Corps in the army would be only a question of a short space of time.

F. M. PERRY, M.D.V.(?).

DR. JOHN LYNN LEONARD, of Spencer, N. Y., has gone to San Juan, Porto Rico. We wish the doctor success in his new field.

DR. J. F. BUTTERFIELD, South Montrose, Pa., has gone to Riverside, California, where he will start an orange grove. He is also shipping his herd of Ayshires and will establish a breeding farm and dairy. The doctor will continue the practice of veterinary medicine.

IN commemoration of the late Mr. Harriman's love for the horse, it was decided to erect a memorial fountain in the city of Goshen, N. Y. The dedication took place in that city on February 25, the anniversary of Mr. Harriman's birth. The fountain was designed by Mr. Chas. Cary Rumsey, Mr. Harriman's son-in-law. The base and drinking trough are of marble, while four horses' heads in bronze are the medium for supplying the water.

OBITUARY.

CLAUDE D. MORRIS, V.S.

Dr. Claude D. Morris was born at Glenora, Yates County, N. Y., April 7, 1857, and died at Binghamton, N. Y., March 20, 1911, of acute pneumonia.

His death removed from his family circle and friends one who was held in high esteem by all, and whose services as chief veterinarian were highly prized by the Borden's Condensed Milk Company. The late Dr. Morris was essentially a self-made man, the admirable product of a well-balanced mind, fortified by those sound principles of integrity and morality that inspire confidence and respect. His youth was a struggle against adversity, his mother dying while he was yet an infant. The father, James W. Morris, of Glenora, N. Y., remarried, and young Morris' home was uncertain until he was adopted by Rufus Henderson, of that locality.

Industry and perseverance were his dominant traits. In 1882, he graduated from the Plainville Business College, Ohio, and went to Texas as an assistant civil engineer. It was in 1886 that he discovered the road to real success when he entered the Ontario Veterinary College, graduating in 1888. He engaged in the practice of veterinary medicine at Pawling, N. Y., at which period he was associated with the New York Central Railway. It was in 1893 that Dr. Morris became associated with the Borden's, whose business grew rapidly and soon demanded his entire time. He moved to Binghamton in 1897. It was his complete mastery of hygiene and sanitary methods applied to the Borden's interests that strongly intrenched the company in public esteem. Sanitation was his keynote, the essential corner-stone of success in all branches of the milk business. He studied constantly in medical science and his lectures in his special line were widely quoted. He had found the niche in the world for which nature had built and fitted him. The company trusted his judgment implicitly and he was worthy of their confidence in the widest sense.

The funeral services of Dr. Morris, held in Binghamton, March 22, bore ample testimony of the high esteem in which he was regarded. The officials and employees of the Borden Condensed Milk Company were numerous represented. The bearers had been selected from associate veterinarians: Dr. W. H. Phyfe, Dr. C. D. Pearce, Dr. H. R. Ryder, Dr. Casius Way, Dr. F. D. Holford and Mr. Fred. Blizzard.

Dr. Morris was united in marriage in 1892 to Minnie Van Wie, of Bath, N. Y., who died eleven years later, leaving three children, Charles, Helen and Minnie. He is also survived by a twin brother, R. O. Morris. To these afflicted ones is directed that measure of sympathy that comes only from the deeply stirred hearts of those who have known and loved a loyal friend, an ideal father and an affectionate relative.

At the time of his death he was secretary of the Ontario Veterinary Society; member of the New York State Veterinary Medical Society, also honorary member of the Beta Chapter Alpha Psi, of Cornell University, as well as a member of the Masonic fraternity.

Dr. Morris was an official such as every citizen may well admire. His was a marked individuality. The seriousness of life did not rob him of his appreciation of its curiosities, or education affect the genial spirit that was born in him. No man was richer in his sympathies, or kinder in his heart, or more genuine in his love for his fellows. Broad in his information, always charming in his humor, frank and sincere in every impulse, a friend of Claude D. Morris felt that he really knew him, and that he was worthy of all the respect and affection that he attracted. His was a genuinely thoughtful and sober mind, blended with a temper of moral earnestness that attracted the admiration and respect of friends. The world held no more choice and beloved spirit; none that leaves a sweeter memory.

F. D. HOLFORD, D.V.M.

DR. C. ARLOING.

The American Veterinary Medical Association has just lost one of her most worthy Honorary Members.

Dr. C. Arloing died on the 21st of March with pulmonary congestion.

Graduated from the Veterinary School of Lyon in 1866, he was first adjunct to the chair of Anatomy in the school of Toulouse, then returned to Lyon in 1876 as Professor of Physiology and ten years after became Director of his alma mater.

Licentiate es-sciences, graduated Doctor of Medicine in 1879, he was appointed Professor of Physiology and later to the chair of Experimental and Comparative Medicine at the Faculty of Sciences at Lyon.

Dr. Arloing was Associate Member of the Academy of Medicine, of the National Society of Agriculture of France, of the Centrale de Medecine Veterinaire, and also of several other scientific organizations.

It is to his efforts that were due the foundation and the success of the Pasteur Institute of Lyon. To him was due the discovery of the vaccine of symptomatic anthrax, that of the microbe of puerperal septicemia, that of the albuminoid nature of microbial toxines, etc., etc.

Dr. Arloing was a firm believer in the unity of bovine and human tuberculosis and he gave much of his active attention to the important question of anti-tuberculous vaccination.

Veterinarians that have attended the International Congress of Tuberculosis in Washington will remember the active part he took in the discussions. The many friends that he has made, while in the United States as well as all the scientists of the whole world, will regret the death of this celebrated professor, investigator and valiant fighter in the cause of control of tuberculosis. Veterinary science has lost with him one of her grandest sons.

DR. H. E. KINGMAN, of the Colorado State College, was recently elected National President of the Alpha Psi, the National Veterinary Fraternity.

THE 1913 Freshman class, U. P. (Veterinary Department), held their first banquet April 4 at Continental Hall. There are 59 members in the class, which was well represented. Drs. Klein, Moyer, Mashall, Harshberger, Gay, Lentz, Meyers, Booth and Neubold were among the guests, and addressed the gathering.

SOCIETY MEETINGS.

SEMI-ANNUAL MEETING OF THE MISSOURI VALLEY VETERINARY ASSOCIATION.

This above meeting was called to order by President Kaupp at the Coates House, Kansas City, Mo., January 24, 1911, at 11 A. M. The secretary announced card system of registration. Committee on Certificate of Membership reported unfavorably to the issuing of such certificates, but suggested in lieu that a card be issued, said card to take the place of a receipt annually to those paid in advance. Motion carried.

Dr. E. Biart reported a very unusual case in a mare, and a number of others reported somewhat similar cases of mares having twin colts, one being either very purulent or else mummified. Consensus of opinion was that condition was due to uterine stimulation with an attempted abortion, which was in turn aborted.

Dr. W. J. Cleveland reported a case of "Precocious Lactation in a Colt"; others had similar conditions that usually stopped of their own accord in a few weeks.

Dr. R. T. Bourne presented "The Physiology of Parturition," which was one of the good things of the meeting; after which difficult parturition, particularly torsion of the uterus and closure of the os was discussed.

"Caesarian Section" for the first and pessary saturated with belladonna for from twenty-four to forty-eight hours with slight incisions if then needed for the other.

Dr. L. D. Brown presented a paper on "Hemorrhagica Septicemia" which was freely discussed; it was suggested that petechia were nearly always found in the thymus glands, kidneys, heart and around the base of the aorta. The relationship between this condition and "Corn Stalk Disease" was also brought up. One suggestion regarding the latter was that there are some stalks hollow which, when cut, give off a peculiar odor that is much relished by cattle.

Dr. K. W. Stowder reports a bulling steer which caused some discussion.

Dr. H. T. Palmer presented his paper on "Immunity." Discussion led by Dr. A. T. Kinsley and participated in by others.

Dr. F. M. Starr presented a paper entitled, "My Experiences with Bacterins," was very freely discussed. Their use in "Jack-sores" had some warm adherents; others claimed that it was necessary to use an autogenic bacterin in those cases, as there was usually two types of strepto and one necroforis in these cases. Bacterins and nuclein have given very nice results for a large number of practitioners in Pyemic Arthrtis. Consensus of opinion was that the one great indication is to increase resistance of the animal in fistulous conditions.

Dr. S. A. Peck reported some peculiar cases.

Dr. C. D. Folse, mare that kicked every time in heat. Once on returning from an eight-mile drive flatulence developed which later acted like meningitis. Autopsy showed worms in heart which had destroyed endocardium. Ante-mortem clot and general circulatory troubles.

A horse after tenotomy a few days later fell dead, with legs doubled up under and hind legs back like a dog. Autopsy showed pneumonia, and there had been no symptoms of lung trouble previous to death.

Dr. R. Ebbitt reported some of his observations about parturient paresis. Several spoke of the fact that those cases where coma is complete recover much quicker than those where coma is only partial.

Dr. B. Conrad gives stimulants and as soon as cow is in condition to swallow gives physic of salts as it stimulates larger flow of milk. For those cases where the condition continues for some time and reinflating does not get them on feet, arecoline will sometimes succeed.

Dr. S. R. Peck suggests two one-fifth-grain tables of nitroglycerine and repeat the inflating in one to two hours.

Dr. J. E. Stayer's report of "Fistula of the Ear," was read by the secretary, and was discussed by a number. Dr. C. H. Stange reported one case located so near the articulation it was impossible to remove all, judicious use of caustics helped healing.

Dr. L. L. Hewitt's report of a number of surgical cases was read by the secretary, and caused considerable discussion.

Dr. Kinsley reported immense growth of bone following uncovering from an injury with no results from treatment. Drs. C.

E. Stewart and J. W. Haxby recommend dry dressing, oakum pad and *tight* bandage. Dr. L. D. Brown removes all possible granulating tissue and uses nitric acid to cauterize with, later Lugol's solution. Dr. A. H. Quinn uses Fowler's solution as dressing.

Several reported cases of "Sand Colic." One case in particular had two large dilations of the duodenum filled with sand and earth.

Dr. C. E. Stewart reported peculiar case in mare, breathing very hard; pressure over one spot on trachea would stop respirations. A short distance either way had no effect on them. Opened up and found a cyst. Opened this and curetted. Refilled within twenty-four hours. Repeated curetting and put trachea tube in. Recovered.

Dr. P. Juckness reported bulls turned in pasture during the forenoon; by noon one sick; died in one hour. Soon another. A veterinarian called, pronounced rabies, three died within as many hours. They would go through fences, take after persons. Post mortem showed extravasation of blood into lung tissue. This soon absorbed and lung tissues looked normal.

Dr. W. Warren read his report of "Cases That Have Interested Me." Jack, with enlarged testicle, size of water pail, treated by hot applications and K. I.; for a long time no result, finally discovered pus and operated; abscess cauterized, recovery, but testicle no good. Many similar cases resulted in suppuration.

Dr. Slater started a discussion on choke. Pulls up head, puts hose in the mouth and turns water on. Recommends operation also.

Dr. H. Jensen gives pilocarpine and eserine, thirty minutes later gives atropine.

Dr. C. E. Stewart passes the stomach tube and pumps a small amount of water slowly. Drs. Gaines and Humphrey report successful operation.

Dr. Bates' one case choked for five days, three times under chloroform; complete anesthesia for thirty minutes. Recovery. Time is essential; do not hurry.

Chairman of Committee on Food and Meat Inspection read the report of the committee and the report was thoroughly discussed by other members of the committee.

Third Day. Dr. V. Nesbit's "Demonstration of the Preparation of Anti-Rabic Vaccine and Animals Showing Influence of the Vaccine." This was one of the valuable features of the

meeting and a number of very valuable points were brought out. Nitric acid is the best agent to cauterize a bite with. Take treatment early, as nearly two weeks expires before immunity is complete; bile is a destructive agent to the virus. When sending specimen to laboratory for examination, best plan is to send complete head well packed in ice.

"Demonstration of the Intradermal Tuberculin Test on Hogs and Cattle Tuberculin Testing," by Dr. O. E. Troy, followed; the reading of the paper by the secretary, all being discussed by a number. The reaction of the intradermal test was typical. Autopsy was made by Drs. C. H. Stange and L. D. Brown, which proved the reliability of the test.

Demonstration of the "Russian Precipitation Test for Diagnosis of Glanders," by Dr. W. L. Boyd, was new and very interesting to all, more so to those engaged in state work. The animals shown had also reacted to mallein.

Dr. G. Babb opened the discussion on "Ulcerous Stomatitis," and a number of others took part with various theories. In some localities the disease appeared before rains, others after the rains. Where much ergot was present there was considerable more necrosis. Milk cows were affected more than other cattle and, when lame, mouths were not badly affected and *vice versa*. Horses were reported as being affected also and condition yielded to same treatment, drinking from same trough was quoted as where disease originated in one outbreak.

Dr. C. E. Stewart reported outbreak of Garget in cows receiving good care. Udder dries up, if attempt to milk is made the teat pulls off. When amputating no hæmorrhage. Occurs before and after calving.

Dr. A. W. Whitehouse's report of cases of Infectious Anaemia was read by the secretary and came in for considerable discussion by those living in infected areas. Fowler's solution alone or combined with alcohol seems to have given them the best results. Trypan blau had not given good results to those who had tried it.

Dr. K. W. Stowder presented his paper, "Operative Technique—the Value of Habit," which was freely discussed by a number, and because some animals do well after an operation with no special preparation is no argument why due precaution should not be taken. This is a paper that should be reread by every veterinarian.

A large number of cases were presented to the clinic for diagnosis and treatment; as usual the treatment varied.

In the Executive Committee meetings the following business was attended to:

RESOLVED, That the Missouri Valley Veterinary Association request the Examining Board of the respective states to supply the secretary with a list of the veterinarians who are eligible to membership, it being desired to revise the mailing list.

Committee, composed of Drs. H. Jensen, A. T. Kinsley, J. V. La Croix, appointed to buy a typewriter.

Hereafter all applications must be accompanied by the fee before they can be acted on.

The Kansas City Veterinary College Band rendered some very pleasing music during the afternoon, and a vote of thanks was extended them.

Sixteen new members were elected.

HAL. C. SIMPSON, Secretary.

CONNECTICUT VETERINARY MEDICAL ASSOCIATION.

The annual meeting of the above association was held in Hartford, at "The Garde," Tuesday, February 7, 1911. The meeting was called to order at 12.45 P. M., by First Vice-President Dr. Judson. Members present: Drs. Thos. Bland, H. E. Bates, F. F. Bushnell, H. C. Balzer, Geo. T. Crowley, B. K. Dow, Oscar Schreck, L. B. Judson, J. H. Kelley, P. T. Keeley, G. W. Loveland, H. L. Tower and J. E. Underhill.

Reports of secretary and treasurer were read and approved.

Dr. R. P. Lyman, having located in Michigan, sent in his resignation from membership, which was conditionally accepted by vote.

B. D. Radcliff, M.D.C., and Arthur T. Gilyard, D.V.M., were admitted to membership.

Seven members, having lost all interest in the association and neglected to reply to official communications, were dropped from membership for non-payment of dues.

Officers elected :

President—Dr. L. B. Judson.

First Vice-President—Dr. J. E. Underhill.

Second Vice-President—Dr. G. T. Crowley.

Secretary—Dr. B. K. Dow.

Treasurer—Dr. Thos. Bland.

Board of Censors—Drs. G. W. Loveland, J. H. Kelley, H. E. Bates, P. T. Keeley and H. L. Tower.

Hon. Abner P. Hayes was present and gave a brief description of some of the bills that had been presented to the legislature, and of the efforts that were being made to enact laws that would very materially affect the profession in the state. A vote of thanks was extended to Mr. Hayes for his interest in the matter.

It was voted that the president, with the secretary, appoint a committee on legislation at some future date.

Dr. Kelley mentioned that the association was always welcome in New Haven, and that he would be pleased to have the semi-annual meeting held at his hospital, if the members cared to do so. No action was taken as to time and place of holding the meeting.

Meeting adjourned at 5.15.

B. K. Dow, Secretary.

DR. I. E. NEWSON, of the Department of Anatomy, Colorado State College, was recently elected Master of Collins Lodge, F. and A. M.

VETERINARIAN RICHARD B. CORCORAN, U. S. A., retired, will spend the summer in Idaho. We wish him all the pleasure that can be derived from it.

AT the closing exercises of the Ontario Veterinary College, in Convocation Hall, on April 25, Prof. W. Horace Hoskins, U. P. Veterinary School, addressed the gathering.

DR. L. A. GRUENER, Veterinary Inspector of Komtchatka, has been detailed by the Russian Government to come to America to study certain phases of Veterinary Science. At present he is pursuing special study in the laboratory of pathology, Colorado State College.

NEWS AND ITEMS.

COPY OF OPINION RENDERED BY SUPERIOR COURT OF PENNSYLVANIA SUSTAINING STATE BOARD OF THAT COMMONWEALTH.

IN THE SUPERIOR COURT OF PENNSYLVANIA.

JOHN JONES JOHNSON, vs. THE STATE BOARD OF VETERIN- ARY MEDICAL EXAMINERS.	}	No. 85, October Term, 1910.
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Appeal by the plaintiff from the judgment of the Court of Common Pleas No. 5 of Philadelphia County.

Filed March 3, 1911.

ORLADY, J.

The plaintiff presented his petition to the Court of Common Pleas for an alternative mandamus to compel the State Board of Veterinary Medical Examiners to register him as a person duly qualified to conduct the practice of the science of veterinary medicine and surgery, in this commonwealth, and to issue to him the proper certificate, etc. The defendant filed an answer setting forth certain facts, which the plaintiff traversed, and the issue of facts so raised was tried before a jury, resulting in a verdict in favor of the plaintiff, which was subsequently set aside, and a judgment *non obstante veredicto* was entered in favor of the defendant.

The first legislative attempt in this State to regulate the practice of veterinary medicine and surgery is found in the Act of April 11, 1889, P. L. 28. The purpose of the act was to reduce to a scientific method, under legislative control, the care and treatment of domestic animals, and to prevent charlatans from practicing their impostures on the credulous public. Preparatory study and training were provided for, and the skill and proficiency of the veterinarian was to be evidenced by a diploma

of graduation from legally chartered institutions, and a registration on our public records.

To avoid doing injustice to those who had been practicing a bond fide calling, but who were without collegiate training, the second section of the act provided, that any person who had assumed the title of veterinary surgeon or analogous title, for the five years preceding the passage of that act, without being entitled to the degree of veterinary surgeon or analogous title, was authorized to continue the use of that title, but to do this it was imposed as a duty on such person, that he should make an affidavit to that fact and be recorded as an existing practitioner.

The requirements of the act are not ambiguous, and the limit of time within which persons of the plaintiff's class could avail themselves of the terms of the proviso was extended, by acts of 1891, 1892, 1895 and 1905, until January 1, 1906. This plaintiff did not take advantage of any of the earlier statutes, and did not apply for registration until November, 1905, when he was rejected, and in December following he filed another application which the State Board again refused. While he was within the statutory time for filing his petition, the authority of the Board was enlarged by the terms of the act of April 18, 1905, which he now invokes as his statutory authority for being registered, and he must submit to the tests therein required. In determining his rights we must look to the Act of 1889, as the provision in regard to "for the five years preceding the passage of this act" (1889) is carried through all the subsequent enactments, and it is as mandatory now as when that statute was passed. He must show that he assumed the title for five years prior to April 11, 1889, not intermittently but continuously, and in good faith, as a practitioner of the science of veterinary medicine and surgery.

The legal principles controlling such cases are clearly defined and have been frequently declared by the courts. The writ of mandamus is but a command to exercise a power already possessed, or to perform a duty already imposed by a statute, and where the duty to be performed is judicial or involved the exercise of discretion, mandamus will lie to compel the official to act in the premises and exercise his judgment and discretion, but will not direct how the duty shall be performed or the discretion exercised. If, however, such judgment or discretion is abused, or there is a mistaken view of the law as applied to the admitted facts of the case, the writ will issue to compel action according

to law: *Runkle vs. Commonwealth*, 97 Pa., 328; *Kell vs. Rudy*, 1 Pa. Superior Ct., 507; *Douglass vs. McLean*, 25 Pa. Superior Ct., 9; *Curran vs. Philadelphia*, 211 Pa., 85.

The good faith of the Board in refusing to register the appellant is to be ascertained by the record and the testimony adduced before it when it determined the question, and not from the testimony taken at a subsequent trial of an issue in court.

The terms veterinary surgeon or analogous title as used in the several statutes, were not intended to embrace quacks, grooms, farriers or others of pretended skill in the mere care of domestic animals, but only persons of such proficiency and experience, who in good faith held themselves out to the world as qualified to render surgical and medical treatment to domestic animals, and the legislative requirement that this professional occupation should be "for the five years preceding the passage of this act" (1889) was as important as any other. No other time of actual or pretended service could be substituted, nor could any fractional part of the required five years be added to other years.

An examination of the testimony submitted to the Board when it refused to register the plaintiff does not satisfy us that it acted from mere caprice, arbitrarily or for unsubstantial or unjustifiable reasons, but fairly shows that the petition was refused because the appellant did not then show by proper and competent evidence, that he had assumed the required title, and had been continuously engaged in the practice of veterinary medicine and surgery for the five years preceding April 11, 1889, as required by the several statutes relating thereto.

The judgment is affirmed.

State of Pennsylvania, }
Philadelphia County. }

I, Alfred B. Allen, Deputy Prothonotary of the Superior Court of Pennsylvania, do hereby certify that the above and foregoing is a true copy of the opinion in the above-entitled cause, so full and entire as appears of record in said court.

In testimony whereof I have hereunto set my hand and affixed the seal of said court at Philadelphia this 14th day of March, A. D., 1911.

(Signed)

ALFRED B. ALLEN,
Deputy Prothonotary.

VETERINARY MEDICAL ASSOCIATION MEETINGS.

In the accompanying table the data given is reported by many Secretaries as being of great value to their Associations, and it is to be regretted that some neglect to inform us of the dates and places of their meetings.

Secretaries are earnestly requested to see that their organizations are properly included in the following list :

Name of Organization.	Date of Next Meeting.	Place of Meeting.	Name and Address Secretary.
Alumni Ass'n, N. Y.-A. V. C....	April 26, 1911...	141 W. 54th St.	J. F. Carey, East Orange, N. J.
American V. M. Ass'n.....	Aug. 22-25, 1911.	Toronto, Can.	C. J. Marshall, Philadelphia.
Arkansas Veterinary Ass'n.....			Horace E. Rice, Little Rock.
Ass'n Médécalle Veterinaire Fran- caise "Laval".....	1st and 3d Thur. of each month	Lec. Room, La- val Un'y, Mon.	J. P. A. Houde, Montreal.
B. A. I. Vet. In. A., Chicago.....	2d Fri. ea. mo...	Chicago.....	H. A. Smith, Chicago, Ill.
B. A. I. Vet. In. A., So. Omaha...	3d Mon. ea. mo.	S. Omaha, Neb.	E. J. Jackson, So. Omaha.
California State V. M. Ass'n.....		San Francisco.	J. J. Hogarty, Oakland.
Central Canada V. Ass'n.....		Ottawa.....	A. E. James, Ottawa.
Central N. Y. Vet. Med. Ass'n.....	June and Nov...	Syracuse.....	W. B. Switzer, Oswego.
Chicago Veterinary Society.....	2d Tues. ea. mo	Chicago.....	D. M. Campbell Chicago.
Colorado State V. M. Ass'n.....	June, 1911.....	Ft. Collins....	B. F. Kaupp, Ft. Collins.
Connecticut V. M. Ass'n.....			B. K. Dow, Willimantic.
Genesee Valley V. M. Ass'n.....			J. H. Taylor, Henrietta.
Georgia State V. M. A.....			P. F. Bahnsen, Americus
Hamilton Co. (Ohio) V. A.....			Louis P. Cook, Cincinnati.
Illinois State V. M. Ass'n.....			J. H. Crawford, Harvard.
Indiana Veterinary Association...			E. M. Bronson, Indianapolis.
Iowa Veterinary Ass'n.....			H. C. Simpson, Denison.
Kansas State V. M. Ass'n.....			B. Rogers, Manhattan.
Kentucky V. M. Ass'n.....			D. A. Piatt, Lexington.
Keystone V. M. Ass'n.....			E. H. Yunker, Phila.
Louisiana State V. M. Ass'n.....			E. P. Flower, Baton Rouge.
Maine Vet. Med. Ass'n.....	April, 1911.....	Bangor.....	C. W. Watson, Brunswick.
Maryland State Vet. Society.....		Baltimore....	H. H. Counselman, Sec'y.
Massachusetts Vet. Ass'n.....	Monthly.....	Boston.....	J. H. Seale, Salem.
Michigan State V. M. Ass'n.....			Judson Black, Richmond.
Minnesota State V. M. Ass'n.....			G. Ed. Leach, Winona.
Mississippi State V. M. Ass'n.....			J. C. Robert, Agricultural Col
Missouri Valley V. Ass'n.....			Hal C. Simpson, Denison, Ia
Missouri Vet. Med. Ass'n.....			D. L. Luckey,
Montana State V. M. A.....		Helena.....	W. S. Swank, Miles City.
Nebraska V. M. Ass'n.....		Grand Island.	H. Jensen, Weeping Water.
New York S. V. M. Soc'y.....	Aug. 1911.....	Brooklyn.....	H. J. Milks, Ithaca, N. Y.
North Carolina V. M. Ass'n.....			W. G. Chrisman, Raleigh.
North Dakota V. M. Ass'n.....	Jan. 1912.....	Agricul. Col.	C. H. Babcock, New Rockford.
North-Western Ohio V. M. A.....	Feb. and Nov...	Lima.....	A. J. Kline, Wauseon.
Ohio State V. M. Ass'n.....			O. V. Brumley, Columbus.
Ohio Soc. of Comparative Med...	Annually.....	Up'r Sandusky	F. F. Sheets, Van Wert, Ohio.
Oklahoma V. M. Ass'n.....			M. P. Hunt, Enid.
Ontario Vet. Ass'n.....			C. H. Sweetapple, Toronto.
Passaic Co. V. M. Ass'n.....	Call of Chair...	Paterson, N. J.	H. K. Berry, Paterson, N. J.
Pennsylvania State V. M. A.....			F. H. Schneider, Phila.
Philippine V. M. A.....			Chas. G. Thomson, Manila.
Portland Vet. Med. Ass'n.....	4th Tues. ea. mo.	Portland, Ore.	Sam. B. Foster, Portland, Ore.
Province of Quebec V. M. A.....		Mon. and Que.	Gustave Boyer, Rigaud, P. Q.
Rhode Island V. M. Ass'n.....	Jan. and June...	Providence...	J. S. Pollard, Providence
So. Illinois V. M. and Surg. A.....	Aug. 1, 2, 3, 1911.	Centralia....	F. Hockman, Louisville.
St. Louis Soc. of Vet. Inspectors.	1st Wed. fol. the 2d Sun. ea. mo.		
Schuykill Valley V. M. A.....		St. Louis.....	Wm. T. Conway, St. Louis, Mo
Soc. Vet. Alumni Univ. Penn.....		Philadelphia..	W. G. Huyett, Wernersville.
South Dakota V. M. A.....	2d Tues. July '11	Watertown...	B. T. Woodward, Wash'n, D.C
Southern Auxiliary of California State V. M. Ass'n.....			S. W. Allen, Watertown.
So. St. Joseph Ass'n of Vet. Insp...	Jan. Apl. Jy. Oct.	Los Angeles..	A. D. Hubbell, Los Angeles.
Tennessee Vet. Med. Ass'n.....	4th Tues. ea. mo.	407 Ill. Ave...	H. R. Collins, So. St. Joseph
Texas V. M. Ass'n.....	Call Exec. Com.		A. C. Topmiller, Murfreesboro
Twin City V. M. Ass'n.....	2d Thu. ea. mo	St. P.-Minneap	R. P. Marsteller, College Sta.
Vermont Vet. Med. Ass'n.....			S. H. Ward, St. Paul, Minn.
Veterinary Ass'n of Alberta.....			G. T. Stevenson, Burlington.
Vet. Ass'n Dist. of Columbia.....	3d Wed. ea. mo...	514—9th St., N. W.....	C. H. H. Sweetapple, For. Saskatchewan, Alta., Can.
Vet. Ass'n of Manitoba.....	Not stated.....		M. Page Smith, Wash., D. C
Vet. Med. Ass'n of N. J.....	July, 1911.....	Winnipeg.....	F. Torrance, Winnipeg.
V. M. Ass'n, New York City.....	1st Wed. ea. mo.	N. Brunswick.	W. Herbert Lowe, Paterson.
Veterinary Practitioners' Club...	Monthly.....	141 W. 54th St.	R. S. MacKellar, N. Y. City.
Virginia State V. M. Ass'n.....	2d Fri. July, 1911	Jersey City...	A. F. Mount, Jersey City.
Washington State Col. V. M. A...	1st & 3d Fri. Eve.	Norfolk.....	W. G. Chrisman, Raleigh.
Washington State V. M. A.....		Pullman.....	R. J. Donohue, Pullman.
Western Penn. V. M. Ass'n.....	1st Wed. ea. mo.	Seattle.....	J. T. Seely, Seattle.
Wisconsin Soc. Vet. Grad.....	Call of Sec'y....	Pittsburgh....	F. Weitzell, Allegheny.
York Co. (Pa.) V. M. A.....		Green Bay....	J. P. West, Madison.
			E. S. Bausticker, York, Pa.

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